# GROUP DIFFERENCES
IN URBAN FERTILITY

A Study Derived from the
National Health Survey

By

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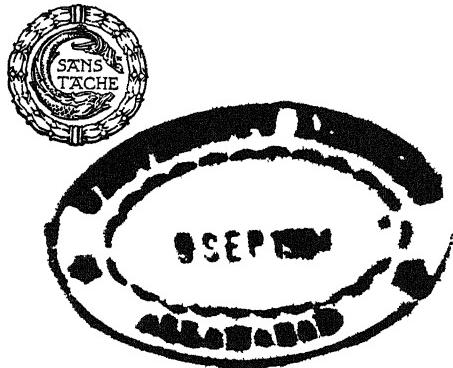
PREFACE

F OR a country at war the population question of most immediate concern is the number of males of military age and their fitness for military service or for other work vital to the needs of the day. Not too remote from this question, however, is the problem of birth rates and their variations in different elements of the population. It has been reported that in the first Selective Service draft, rejections due to physical unfitness and inadequate schooling amounted to about 50 per cent. The physical requirements in a peace-time draft were probably more rigid than at present. Nevertheless, one cannot help linking the high rate of rejections with the disproportionate contributions of impoverished families and communities to the nation's children. In large rural sections of the South, for instance, the areas of highest fertility tend also to be the problem areas with respect to family income, schools, nutrition, and general facilities for the public health.

The urban population is collectively characterized by a low level of reproduction; so low that without replenishment from rural areas it would ultimately fail by a wide margin to reproduce itself. There are, however, internal variations in urban fertility by region, size of city, nativity, color, and socio-economic status. It is with such problems, and particularly that of urban differential fertility along socio-economic lines, that the present report is concerned.

The first rather comprehensive study of class differences in the fertility of urban families in this country was that published by Sydenstricker and Notestein[1] in 1930, based

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[1] Sydenstricker and Notestein, 1930.

Note: With the exception of those to official sources, most text references in this report include only the last name of the author and year of publication. More detail is given when it is required for ready identification in the Bibliography. Specific pages are cited only when required by the context.

upon a large sample of data from the 1910 Census. The study indicated that among native-white wives in Northern and Western cities there was a marked and consistent inverse relation between number of children ever born and the occupational status of the husband. After the appearance of that article a leading question among students of population was that concerning the trend of the differentials since 1910. For a really definitive answer to this question, we must await a prospective analysis from the Bureau of the Census. In 1940, for the first time since 1910, the Census collected data concerning total number of children ever born from a 5 per cent random sample of the population. To provide materials for a comprehensive study of trends in differential fertility, the Bureau cooperated with the Work Projects Administration in having comparable data transcribed from the schedules of the 1910 Census.

In the meantime, available data indicate that changes are taking place in the character of urban differential fertility. Although not sufficiently similar to the 1910 material to warrant close comparisons of results, two large bodies of data have furnished independent indication of such changes. One was analyzed by Notestein and was derived from special tabulations of the 1930 Census data for families in the East North Central States.[2] The other constitutes the basis for the present monograph and is the large mass of fertility data collected by the National Health Survey, an investigation conducted by the United States Public Health Service in 1935–1936 with the assistance of personnel furnished by the Work Projects Administration.

Although undertaken primarily as a study of the incidence and severity of illness in different elements of the urban population, the *Survey* secured records of births during the year preceding enumeration, and a variety of data permitting classification along demographic and socio-economic

[2] Notestein, 1938.

lines. The *Survey* covered some 700,000 families in eighty-three cities of eighteen states. In addition, relatively small samples were secured from supplementary enumerations in selected rural counties of three states.

Various limitations of the fertility data collected by the *Survey* are described in this report. At this point it may be germane to mention three characteristics of the materials that enhance their value for studies of class differences in fertility. In the first place, although the *Survey* was unduly weighted with families from large cities, the sampling procedures were designed to yield broad regional representativeness and a cross-section of the population within each city that was surveyed. The *Survey* probably affords a sample that is fairly representative of urban families with respect to socio-economic status. To the extent that this is true, added meaning can be attached to the magnitude of fertility rates for given socio-economic classes by relating them to the proportionate importance of the classes considered. In the second place, the large size of the sample and the multiple indices of socio-economic status available permitted cross-tabulations along socio-economic lines. Thus, it was possible to study *intra-class* as well as *inter-class* differences in marital fertility, and to some extent to judge the relative importance of specific factors associated with variations in fertility. In the third place, special tabulations procured by Dr. B. D. Karpinos, of the United States Public Health Service, provided a basis for computing general fertility and reproduction rates. Consequently, the present-day pattern of differential *marital* fertility could be compared with that of differential *general* fertility and net reproduction.

In part, the data presented in this report have appeared in four published articles. The first was highly preliminary since it was based upon results from only five of the eighty-three cities.[3] The remaining were based upon results from

[3] Kiser (January) 1938.

the total *Survey*. One of these[4] described in broad outline marital fertility rates by socio-economic status. This was followed by an article in collaboration with Dr. Karpinos[5] in which patterns of differential marital fertility were compared with patterns of differential reproduction. The last article was a preliminary analysis of intra-group differences in marital fertility,[6] based upon cross-tabulations along socio-economic lines.

Except in the case of the paper under joint authorship, the previously published articles were designed simply to sketch the most important findings. Although they contained charts, the actual rates and tabular material were in large part postponed for presentation in the present work. This monograph also includes other material that was not presented in the preliminary articles, such as the analysis of adequacy of enumeration of births in the *Survey*, age-specific fertility rates, composition of the samples along socio-economic lines, fertility data for specific large cities, the results from the supplementary survey in rural areas, and the analysis of available data on pregnancy wastage.

To recapitulate the contents briefly, the plan of this report is, first, to present fertility rates by nativity, color, area, and size of community. Then, these rates are analyzed according to occupational status of the head, educational attainment of the wife, and family income, respectively. Next, a chapter is devoted to available cross-classifications of the data. This is followed by a comparison of the pattern of class differences in marital fertility with that of class differences in general fertility and reproduction rates. The ensuing chapter is devoted to the rural sample and the next is concerned with group differences in ratios of pregnancy wastage. Finally, some attempt is made to bring together

[4] Kiser, 1939.
[5] Karpinos and Kiser, 1939.
[6] Kiser, 1941.

the outstanding results of the study and to appraise their implications.

The writer wishes to express his indebtedness to the United States Public Health Service for its cooperation in making this study possible. That organization, through a cooperative arrangement with the Milbank Memorial Fund, generously supplied the desired tabulations of fertility data for married women of childbearing age in the National Health Survey. For their help in arranging these tabulations the writer wishes to thank Mr. G. St.J. Perrott, Dr. Selwyn D. Collins, and Mr. Rollo H. Britten. Full credit is due Dr. Bernard D. Karpinos for the materials on class differences in general fertility and reproduction rates. These men and their colleague, Dr. Harold F. Dorn, read all or parts of the manuscript and offered valuable criticisms. Many helpful suggestions were also received from Miss Dorothy G. Wiehl, Dr. Frank W. Notestein, Dr. Louise K. Kiser, and Dr. Gilbert W. Beebe.

The author acknowledges with gratitude the excellent facilities for research afforded by the Milbank Memorial Fund. He is indebted to Dr. Frank G. Boudreau for his interest and encouragement. Practically all members of the Fund's staff have given real help of one type or another. The writer is indeed grateful to them for their criticisms and for statistical, stenographic, and editorial assistance in the preparation of the data and in the writing of the manuscript. Nevertheless, the author was given a free hand in this report and he alone is responsible for any errors of fact or interpretation.

C. V. K.

New York City
June, 1942

CONTENTS

CHAPTER I

NATURE OF THE MATERIAL

THE field of vital statistics provides a common meeting ground for students of public health and students of population. That the basic data for this study came from the National Health Survey is an illustration of the close relation between problems of health and certain problems of population. Although ·this study is somewhat specialized and can be regarded as a by-product of the National Health Survey, the data on which it is based were collected because they were essential to the primary objective of the *Survey*. Facts such as the number of births and data concerning the demographic and socio-economic characteristics were needed for adequate study of health conditions among different elements of our population.

Since the fertility data formed an integral part of the National Health Survey, they are necessarily affected by certain general merits and weaknesses of that study. In addition, questions arise concerning the characteristics of the fertility data themselves. For description and appraisal we may, therefore, begin with the general investigation and then consider the specific materials used in this report.

SCOPE, METHOD, AND GENERAL REPRESENTATIVENESS

The National Health Survey was conducted during the fall and winter of 1935–1936 by the United States Public Health Service with assistance from the Work Projects Administration. The chief object of the *Survey* was to study the incidence and severity of illness in relation to its social and economic setting. Detailed records were collected

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through a house-to-house canvass of 703,092 households in eighty-three cities of eighteen states. These households included 2,502,391 individuals, or approximately 3.6 per cent of the urban population of the United States reported in the 1930 Census.[1]

A detailed account of the scope and method of the *Survey* has been presented by Perrott, Tibbitts, and Britten.[2] This constitutes the main source for the following description of the method of selecting cities, the sampling procedures, the representativeness, and general conduct of the *Survey*.

Selection of Cities and Sampling Procedures. Plans regarding cities to be surveyed and sampling ratios for each city were worked out in detail before the field work began. In preparation for the selection of cities to be studied, all urban places of 2,500 population or more in 1930 were classified by area into four regional groups: Northeastern, North Central, Southern, and Western.[3] The cities within each of these regions were subdivided into four size-groups: 500,000 and over; 100,000 to 500,000; 25,000 to 100,000; and under 25,000. The cities actually selected, by area and size, are listed in Appendix Table 1. In so far as possible, it was desired to have the sample representative of the urban population of the United States with respect to the above groupings by area and size. It was realized from the outset, however, that

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[1] A supplementary survey was made among 36,801 households, embracing 140,418 persons, in selected primarily rural counties of Georgia, Missouri, and Michigan, in order that similar studies of the rural health problem might not be entirely neglected. Fertility data from these materials are analyzed in Chapter VIII of this study.

[2] Perrott, Tibbitts, and Britten, 1939.

[3] The above four regions correspond as follows to the geographic divisions conventionally used by the Bureau of the Census:

  Northeast: New England and Middle Atlantic.
  North Central: East North Central and West North Central.
  South: South Atlantic, East South Central, and West South Central.
  West: Mountain and Pacific.

problems of administration and other considerations in a large work-relief project would prevent inclusion of a sufficient number of small cities to yield close representativeness with respect to size of community.

To compensate somewhat for this situation, it was decided that whereas sampling procedures would be utilized in the selected cities having 100,000 population or over in 1930, complete enumeration would be attempted in the surveyed cities of smaller size.[4]   Decisions regarding the approximate sizes of the samples to be sought in large cities were made "not according to a fixed ratio but on the basis of the number believed adequate to represent the individual community, and the number required on the basis of regional and size distribution."[5]

After the number of schedules desired for a given city had been decided upon, the sampling ratio was computed by relating the number of schedules wanted to the estimated total number of households in the community.[6]   It was desired to have the surveyed portions of each city representative with respect to demographic and socio-economic attributes.   The most feasible method for accomplishing this appeared to be the utilization of 1930 Census Enumeration Districts, or subdivisions of them, as sampling units.   If any Enumeration District contained less than 1,000 population, it was given a chance at being included in entirety in the *Survey*.   Districts of 1,000–2,000 population were arbitrarily divided on city maps into two parts; those of 2,000–3,000 into three parts, etc.   The districts or subdistricts were then listed in serial order and selections were made by taking every seventh, eighth, ninth, or tenth unit, etc., depending upon the

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[4] An exception was made in the case of Montgomery, Alabama.   *See* footnote 7.

[5] Perrott, Tibbitts, and Britten, 1939, p. 1666.

[6] The total number of households was estimated by dividing 1930 Census populations by 4, the number taken as the approximate average size of urban households in that year.

TABLE 1.—*Regional and size-of-city distributions of the urban population in the Health Survey and in the 1930 Census*

Per Cent by Region			Per Cent by Size of City		
Region	Health Survey	1930 Census Urban	Size of City	Health Survey	1930 Census Urban
Broad Grouping			*Broad Grouping*		
Total	100.0	99.9	Total...	100.1	100.0
Northeast.	36.5	38.7	500,000 and Over.....	43.1	30.2
North Central.	32.9	32.4	100,000–499,999	30.7	22.5
South	18.2	18.7	25,000–99,999...	14.0	18.7
West..	12.4	10.1	Under 25,000..... . .	12.3	28.6
Detailed Grouping			*Detailed Grouping*		
Total...	100.1	100.1	Total.	100.0	99.9
New England...	8.6	9.2	1,000,000 and Over...	23.8	21.8
Middle Atlantic	27.9	29.6	500,000–999,999	19.2	8.4
East North Central . ..	21.9	24.4	250,000–499,999..	20.5	11.5
West North Central.. ..	11.1	8 1	100,000–249,999.... .	10.2	10.9
South Atlantic	4.3	8.3	50,000–99,999...	3.6	9.4
East South Central . .	4.3	4.0	25,000–49,999	10.4	9.3
West South Central	9.7	6.4			
			10,000–24,999........	4.9	13.2
Mountain	1.5	2.1	5,000–9,999..........	5.2	8.6
Pacific	10.8	8.0	2,500–4,999..........	2.2	6.8

predetermined sampling ratio.[7] The areas thus selected were scheduled for complete enumeration in the *Survey*.[8]

Representativeness: Area and Size of City. The total list

[7] The sampling ratios were as follows:

Atlanta, 1/7; Birmingham, 1/6; Boston, 1/7; Buffalo, 1/6; Chicago, 1/24; Cincinnati, 1/10; Cleveland, 1/7; Columbus, 1/8; Dallas, 1/7; Detroit, 1/19; Fall River, 1/3; Flint, 1/8; Grand Rapids, 1/9; Houston, 1/8; Los Angeles, 1/18; Minneapolis, 1/11; Montgomery, 1/2; Newark, 1/8; New York City, 1/38; New Orleans, 1/9; Oakland, 1/11; Philadelphia, 1/15; Pittsburgh, 1/8; Portland, 1/9; Richmond, 1/4; St. Louis, 1/9; St. Paul, 1/7; Salt Lake City, 1/5; Seattle, 1/10; Spokane, 1/4; Syracuse, 1/5; and Trenton, 1/4.

[8] An exception to the usual procedure was made in New York City, where it was possible to select every thirty-eighth household from the comprehensive list of addresses provided by the New York City Housing Authority.

of cities surveyed, together with the numbers of household schedules actually procured, is given in Appendix Table 1. The representativeness of the total sample with respect to area and size may be considered first. In Table 1, the percentage distributions of the surveyed populations by region and size of city are compared with similar distributions derived from 1930 Census reports for the urban population of the United States. It is seen that close representativeness was secured with respect to region but not with respect to size of city. Almost three-fourths of the surveyed persons resided in cities of 100,000 population or over, whereas little more than one-half of the total urban population in 1930 resided in cities of that size.

Although the above broad groupings by area and size are those utilized in selecting the sample, it is of interest to make similar types of *Survey-Census* comparisons with more detailed groupings, as in the lower section of Table 1. The areal representativeness of the *Survey* is seen to persist fairly well when the nine geographic divisions were used. With respect to size, the over-representation of large cities accrued mainly from cities of 250,000 to 1,000,000 population. The *Survey* secured substantially "correct" proportions from cities of 100,000–250,000 population and from cities of 1,000,000 inhabitants or more.[9] Furthermore, it is seen that the relatively low proportion of the surveyed population from cities of 25,000–100,000 was due to a shortage in cities of 50,000–100,000. There was a slight over-representation of cities 25,000–50,000. With respect to cities under 25,000 the *Survey* deficiencies are apparent in each of the three subclasses.[10]

[9] Although all of the five cities having 1,000,000 or more inhabitants in 1930 were included in the *Survey*, the sampling ratios used in these cities were sufficiently low to prevent undue representation from such metropolitan areas. *See* footnote 7.

[10] Comparisons by size of city within specific areas, not presented in the table, indicated that the over-representation of large cities was greatest in the Northeastern and North Central areas. Within each broad region except the South

Representativeness: Demographic and Socio-Economic At-tributes. As previously stated, although the sample was overweighted with large cities, efforts were made to secure a cross-section of the population within each surveyed city. Attainment of this objective obviously would not guarantee representativeness of the combined sample with respect to demographic and socio-economic characteristics, but ap-proximation to this end was desired and apparently secured.

The representativeness of the *Survey* has been studied by comparisons with the 1930 Census data for the total urban population. With respect to color, the *Survey* contained a slightly higher percentage (10.1) of colored persons than did the total urban population in 1930 (8.9 per cent).[11] This difference was probably due in part to the selection of spe-cific cities, but at all events it is slight and all analyses in the present report are made by color.

With respect to age, the *Survey* was closely similar to the 1930 urban population. The differences that did exist indi-cated slightly older ages in the *Survey* groups than in the 1930 urban population, Table 2. This held true to some extent when the Census data were restricted to surveyed cities, and may reflect aging of the population. Whatever the explanation of the slight differences may be, the striking feature is the similarity of the age distributions in the *Survey* and Census data. Substantial representativeness held true when the age-analysis was made by color and sex.[12]

The *Survey* also appeared to be close to the 1930 Census urban population with respect to distribution of households by size, Table 3. This similarity, however, cannot be taken as evidence of complete enumeration of births. The com-

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there was sub-quota representation from cities of 25,000 to 100,000. In all areas except the West there was fairly conspicuous under-representation from cities of the smallest size.

[11] Perrott, Tibbitts, and Britten, 1939, pp. 1674–1675.

[12] *Ibid.* p. 1675.

TABLE 2.—*Age distribution of the urban population in the Health Survey and in the 1930 Census*[1]

Age (Years)	Percentage Distribution		
	Health Survey	1930 Census	
		Urban U. S.	Survey Cities[2]
All Ages.............	100.0	100.0	100.0
Under 5	7.0	8.2	8.0
5–9	8.1	9.0	8.8
10–14	9.0	8.6	8.4
15–24	17.8	18.0	18.1
25–34	17.0	17·3	17.8
35–44	15.8	15.5	15.8
45–54	12.1	11.2	11.3
55–64	7.3	6.9	6.8
65 and Over	5.7	5.1	4.9
Unknown Age	0.2	0.1	0.1

[1] Table from Perrott, Tibbitts, and Britten, 1939, p. 1674.

[2] For each sampled city the proportion of the 1930 population included was in accordance with the sampling ratio.

TABLE 3.—*Percentage distribution of households by size, Health Survey and urban United States (1930)*[1]

Number of Persons Per Household	Health Survey[2]	1930 Census Urban[3]
1	7.8	8.0
2	26.2	25.1
3	21.8	22.1
4	19.4	18.1
5	11.8	11.6
6–7	9.4	10.6
8+	3.7	4.3

[1] Table from Perrott, Tibbitts, and Britten, 1939, p. 1675.

[2] Based on 0.5 per cent random sample of punched cards.

[3] Excludes quasi-families.

parison is too crude for that purpose and, furthermore, it is known that the Census tends to fall short in the enumeration of infants. More direct testing, discussed in a later

section, indicates some under-enumeration of births in the *Survey*.

The surveyed population was somewhat under-represented by males, the sex ratio being 92.4 males per 100 females, as compared with 98.1 for the 1930 urban population.[13] The discrepancy in this respect was greater for the colored population than for the whites. For both whites and colored it was concentrated in the adult ages.[14]

The proportions married in given age groups were somewhat lower in the surveyed population than in the 1930 urban population, Table 4. This held true when the *Survey-Census* comparisons were restricted to specific cities. If certain disturbing factors are taken into account, however, it appears that the surveyed populations may be fairly representative with respect to proportions married. In the first place, there was a marked slump in the marriage rate during the period intervening between the Census and the *Survey*, due to the depression.[15] Although the annual rate of marriage regained its predepression level by 1935, the dip in the rate doubtless resulted in an accumulation of "lost" and "delayed" marriages, and this situation would be expected to show up in proportions married in the younger age groups. The other factor is the *Survey-Census* dissimilarity in the classification of women who were separated but not divorced. Such women were included with the "married" in the Census data but not in the *Survey* data. This difference is believed to be especially pertinent to the observed *Survey-Census* difference in proportions of colored women reported as married,

[13] *Ibid.* p. 1674.

[14] For better evaluation of the demographic representativeness of the sample it is well to note that the *Survey* excluded the following if they had been absent from their households for one month or longer: "(a) Persons in penal institutions; (b) residents of Army and Navy posts and barracks, orphanages, and homes for the aged; (c) persons in hotels, rooming houses, and missions who had not been in their present abode for a month or longer." (*Ibid.* p. 1668.)

[15] Stouffer and Spencer, 1936.

TABLE 4.—*Comparison of the Health Survey and 1930 Census with respect to proportions married among urban females of specified age, color, and residence*

Age of Women	Proportions Married			
	White		Colored	
	Survey	1930 Census	Survey	1930 Census
	Total Urban[1]			
Total 15–44.... ...	56.4	59.1	52.0	60.1
15–19	6.7	9.2	14.7	19.6
20–24	40.0	45.9	45.9	58.5
25–29	69.0	70.9	59.1	71.4
30–34	74.0	79.2	66.5	73.4
35–39	75.9	80.1	63.9	71.4
40–44	81.1	78.5	57.1	66.2
	Surveyed Eastern Cities of 500,000 Population and Over[2]			
Total 15–44	52.2	55.5	52.1	61.9
15–19	3.2	5.0	10.2	17.1
20–24	30.7	37.0	44.5	57.8
25–34	66.9	71.3	61.5	71.8
35–44	77.5	77.9	61.7	69.4
	Surveyed Southern Cities of 100,000–500,000 Population[3]			
Total 15–44	59.4	60.4	50.4	57.9
15–19	11.6	13.8	13.5	20.9
20–24	47.6	51.8	46.0	58.6
25–34	71.9	75.1	61.8	69.7
35–44	75.5	75.7	59.3	64.5

[1] Total *Survey* compared with total urban in 1930 Census.

[2] Includes: Boston, Buffalo, New York, Philadelphia, and Pittsburgh.

[3] Includes: Atlanta, Birmingham, Dallas, Houston, New Orleans, and Richmond.   .

particularly at middle and later ages of the childbearing period.[16]

[16] In other words, the results for the two series might have been more similar if the comparison had related to proportions "ever married," including the widowed, divorced, and separated with the "married" women.

It is not possible at this writing to supply a satisfactory test of the representativeness of the sample along socio-economic lines. When they become available in sufficiently detailed form, the 1940 Census materials should provide bases for testing the representativeness of the *Survey* with respect to family income and educational attainment. In making *Survey-Census* comparisons by income, however, the economic recovery from 1935 to 1940 should be kept in mind.[17]

The Study of Consumer Purchases, conducted during 1935–1936, procured data on family income, but the definitions and methods of collecting data utilized in that study were too dissimilar from those of the Health Survey to warrant close comparisons.[18] This was the conclusion reached in a report of the National Resources Committee after attempts were made to check the Consumer Purchases data with the Health Survey data. The actual comparisons indicated that although the two sets of data agreed closely with

[17] There is also the lack of suitable *Survey-Census* comparisons with respect to occupational class. The occupational class code developed by Alba M. Edwards for analyses of 1930 Census data was used in the *Survey*, but tabulations of the *Survey* data by occupational class have been made with reference to the household head, whereas those for the 1930 Census generally relate to all gainfully employed males 10 years of age and over. *See* Edwards, A. M., 1938. The occupational class code used in the 1940 Census data was somewhat different from that for 1930. These changes in themselves would probably not seriously affect comparability with the *Survey*, but published data to date relate to persons 14 years of age and over and in other respects are not yet available in sufficiently detailed form to warrant comparisons with the *Survey*. *See* U. S. Bureau of the Census: Employment Status of Persons 14 Years Old and Over (1940). Population (by State), Series P-8.

[18] It has been shown that the distribution of the families by income in the *Survey* cities is closely similar to the estimated distribution for the total country prepared by the National Resources Committee largely on the basis of Consumer Purchases data. (*See* Perrott, Tibbitts, and Britten, 1939, pp. 1674–1676.) The unsatisfactory nature of this agreement, however, consists in the fact that the estimates for the total country embraced rural areas as well as cities. The income of urban families in the *Survey* would be expected to run *higher* than the estimates for the total country if the two sets of data were representative of their respective universes and if comparable definitions had been used.

respect to character of variations in family income from one type of community to another and by color and nativity, the incomes ran consistently lower for Health Survey families than for Consumer Purchases families of similar color, region, and degree of urbanization. Concerning this situation the National Resources Committee report states:

> This difference was due, in part at least, to the fact that the definition of income used in the National Health Survey did not include certain items included in income by the Study of Consumer Purchases—e.g., the imputed value of the occupancy of an owned home—and also to the fact that one-person families were included in the distributions from the National Health Survey. . . .
>
> Because of the considerable differences in definition of income and in the method of classifying families by income level in the two studies, and the difference in the 12-month period covered by the data, it was not considered desirable to make any adjustments of the estimated income distributions in the present study to bring these into closer agreement with the findings of the National Health Survey.[19]

To summarize this section, it appears that although the surveyed sample is overloaded with people from large cities, it is composed of "correct" quotas from the four broad regions, and it appears to be substantially representative of the urban population, at least in so far as certain demographic attributes are concerned. The sampling procedures were designed to yield cross-sections of the surveyed cities with respect to socio-economic attributes as well, but the sample is not adequately tested on this score.

FERTILITY DATA AND PLAN OF ANALYSIS

Although the major purpose of the National Health Survey was to collect data concerning health conditions among various groupings of our urban population, the schedule contained items excellent for analyses of differential fertility. Briefly described, these were: (a) entries regarding number

[19] National Resources Committee: CONSUMER INCOMES IN THE UNITED STATES —Their Distribution in 1935–1936, 1938, p. 59.

and type of births to each woman during the year preceding
enumeration (approximately 1935); and (b) descriptive data
permitting classification of the women according to demo-
graphic and socio-economic attributes.   The fertility data
proper and the descriptive materials may be briefly de-
scribed and appraised.

Enumeration of Births.   Facts regarding births to women
during the *Survey* year were recorded in two sections of the
enumeration schedule: (1) the section devoted to disabling
illness; and (2) the household roster.   In the "illness" sec-
tion the number and type of births were recorded in the form
of terminations of confinements experienced by women dur-
ing the twelve months preceding enumeration.[20]   These
appeared as "1 live birth," "1 stillbirth," "live-born twins,"
etc.   Live births during the past year were also recorded in
the household roster regardless of whether the infant was
living at the time of the enumeration.[21]   To facilitate identi-
fication, the enumerators were required to record ages of
infants under one year of age in terms of months, weeks, or
days.[22]

From some points of view it is unfortunate that no data
were collected concerning total number of children ever born
to each married woman in the *Survey*.[23]   Such data, how-

[20] The enumerators were required to give detailed data concerning each illness
which disabled the individual seven days or longer.   Virtually all confinements
would have been included under this definition, but to minimize the possibility of
missing the exceptions, confinements were among the several conditions that enu-
merators were required to list, regardless of duration of disability.   Instructions
to this effect were given not only in the manual of survey instructions but also in
the printed heading of the "disabling illness" section of the schedule.

[21] This provision constituted part of the general ruling that the household roster
was to include names of members of the household who died during the past twelve
months.

[22] In case of deceased infants this age referred to time of death.   In these cases
the date of death provided a check on whether the birth occurred during the past
twelve months.

[23] The household roster was restricted by definition to persons residing in the
household, members of the household who had died during the twelve months

ever, will eventually be available from the 1940 Census. Moreover, indices based upon births during one year possess certain advantages over those relating to total number of children ever born. They are obviously more sensitive to current conditions than are those based upon total past fertility. Furthermore, since rural migrants are encountered in urban populations and are presumably unequally represented in the various socio-economic groups, the annual birth rate perhaps provides a truer picture of class differences in fertility in urban areas than does a rate which is influenced by the fertility levels of individuals before they migrated to the city.

Socio-Economic Classifications. In addition to the classifications by area and size of city, color, nativity, age, and marital status, it was possible to make subdivisions on the basis of occupational status of the head of the household, educational attainment of the individual woman, and amount of family income during the year preceding enumeration.

Since the three socio-economic attributes will be fully discussed in later chapters, only the outstanding characteristics need be stated here. The occupational classifications were based upon *Survey* returns concerning the *usual* type of work of the head of the household, regardless of his employment status at the time of the *Survey*. In coding the specific occupations for assignment into classes, the *Survey* followed the system developed by Dr. Alba M. Edwards for his analysis of occupations in the 1930 Census. For the fertility tabulations, however, the more detailed occupational classes derived from the original coding were consolidated into four broad classes: professional, business, skilled and semiskilled, and unskilled.

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preceding enumeration, and to former members residing elsewhere, provided their departure from the household took place less than one month prior to enumeration.

The educational classifications were secured from recorded information regarding the school attainment of the women in the sample. The data were in the form of highest grade reached, not necessarily completed. For individuals who never entered high school the specific grade of common school attainment was recorded. Only two categories were provided for those above the common school level. These were "Entered High School" and "Entered College."

The income classifications were based upon reported income of the entire family during the year preceding enumeration, thus including the income of the household head and of all resident persons related to the head by blood, marriage, or adoption. The enumerators were not required to inquire about specific amounts; instead they were requested to have the informant designate which of six income categories, ranging from under $1,000 to $5,000 and over, was appropriate to the family. Provisions were also made for indicating whether or not any member of the family received public aid, including work relief, during the *Survey* year.

In recapitulation, the occupational status refers to the household head, educational attainment to the woman, and income status to the total family. It is also important to bear in mind that, whereas income status relates specifically to the *Survey* year, the occupational class relates to the usual employment status, and educational attainment relates to the accomplished fact of school attendance.

Tabulations of Fertility Data and Character of the Analyses. The main fertility tabulations, and consequently the major analyses of this report, concern fertility rates during one year (approximately the calendar year 1935) among surveyed married women of childbearing age classified by demographic and socio-economic attributes. There were 375,658 married women 15–44 years of age and of known color and nativity, divided as follows: native-born whites, 284,246; foreign-born whites, 51,901; and colored, 39,511.

A valuable characteristic of the tabulations for married women is that provisions were made for certain cross-classifications along socio-economic lines. Each occupational class was tabulated according to educational status of the wife and retabulated by family-income status. Thus, it was possible not only to analyze variations in birth rates by the three variables considered separately, but also in several combinations. It was possible, for instance, to study the character of variations in birth rates by occupational status among wives in the same broad class with reference to education or income. To a limited extent, the cross-classified data permitted study of the relative importance of the three factors in so far as they concern variations in birth rates of the surveyed wives.

In addition to the tabulations restricted to married women, some special ones were made which included all surveyed women of childbearing age, regardless of marital status. These permitted the computation of general fertility rates, and both gross and net reproduction rates by educational and family-income status. Since the net reproduction rate is designed to afford a measure of the self-replacement potentialities of populations under existing age-specific fertilities and mortalities, this index in particular has become increasingly popular. Hitherto, however, there have been few opportunities to study the net reproduction of socio-economic groupings of the population.[24] The basic data afforded by the *Survey* for analyses of this nature are in the form of births during the year preceding enumeration related to urban white females 15–44 years of age, and of given educational and family-income status, regardless of marital condition. These data were tabulated and analyzed by Dr. B. D. Karpinos of the United States Public Health Service, and with his collaboration a study has been published in which class differences in marital fertility were compared with class

[24] Such analyses are possible from 1940 Census data and have been planned by the Bureau of the Census.

differences in general fertility and net reproduction.[25]   This
analysis affords some indication of the importance of class
differences in proportions married as related to differential
fertility.   Some of the outstanding results are discussed in a
later chapter of this monograph.

Advantage was also taken of the opportunity to compute
crude birth rates for the total surveyed populations, by city
and color.   By the comparison of these with resident birth
rates for 1935, computed from official data for the same
cities and adjusted for under-registration, it was possible
to secure some estimate of the adequacy of reporting of
births in the *Survey*.

SUMMARY

With the exception of the supplementary rural data, which
are separately analyzed, the Health Survey was restricted to
urban populations.   Furthermore, it was weighted by families
in large cities.   For each city selected, however, attempts
were made to secure a cross-section of the population, either
through complete enumeration or through random sampling.
The available tests indicate that despite the undue weighting
of large cities in the sample, the *Survey* is fairly representa-
tive of the urban population, at least along certain demo-
graphic lines.

As will be described later, the major analyses in this re-
port are of such a nature that some of the atypicalities of
the total sample are not of much consequence.   This is
especially true in so far as any slight unrepresentativeness by
color, sex, and marital status is concerned.   Deficiencies of
this type have virtually no bearing on analyses of variations
in fertility rates among *married women*, classified by *color*
and socio-economic attributes.   The over-representation of
large cities is more important, but some of the major analyses
are presented by area-size groupings of the cities as well as
for the total sample.

[25] Karpinos and Kiser, 1939.

With respect to the fertility data, probably the chief inadequacy is under-enumeration of births. In the succeeding chapter some attempt is made at estimating the extent of this deficiency for different segments of the surveyed population. Unfortunately, there was no basis for judging the extent of under-enumeration along socio-economic lines. Although this factor has bearing on the observed patterns of differential fertility, it appears doubtful that it is sufficiently important to affect the major conclusions of the study.

There are also inadequacies in the socio-economic classifications and in some instances certain biases appear to accompany the uses to which they are put. Although it has not been possible always to estimate the importance of these biases, an attempt has been made at least to acquaint the reader with the character of the inadequacies known or believed to have bearing on the questions under consideration.

With all their imperfections, the fertility data from the National Health Survey are believed to be among the best recent materials for studies of class differences in fertility. Most adequate of all should be the 1940 Census materials, since they include new provisions for classifications by socio-economic status and data regarding total number of children ever born, procured from a random sample of the entire population. Outside of official data, however, the sample to which the present data relate is the most comprehensive of its kind ever secured for this country. With the large number of cases and with the type of data available, it was possible to make certain analyses not previously feasible from localized field studies.

DEMOGRAPHIC FACTORS IN CRUDE BIRTH AND MARITAL FERTILITY RATES

FOR current comprehensive data on differential fertility along broad demographic lines, students of population await with interest the results of the 1940 Census. That Census will not only afford indices based altogether upon enumerative data but will also furnish the population bases for birth rates from official registration data for various subdivisions of the population. Due to uncertainties about urban populations since the depression, the Division of Vital Statistics refrained from publishing birth rates by city or even for the total urban population during the several years preceding the 1940 Census. During this time, however, the Division initiated the practice of allocating births to place of residence; so added interest will be attached to the release of birth rates corrected for residence.

With their comprehensive coverage, official data are naturally superior to *Survey* materials for indications of differential fertility along broad demographic lines. The *Survey* materials, however, have certain characteristics that, in the past at least, have not always been found in official data. Since the data by nativity and color relate to identical cities, the complications arising from differing proportions of native-white, foreign-white, and colored women residing in rural areas are wholly removed, and those arising from differing proportions in urban areas of various size are in large part eliminated. It is also well to point out that the birth data for surveyed populations are automatically "corrected for residence." Problems of births to nonresident

persons in the cities are not encountered. Also, for the
analyses along broad demographic lines, crude birth rates
as well as marital fertility rates were computed for the
Survey data. The availability of these two types of indices
helps in the interpretation of Negro-white differences in
fertility. The outstanding value of the crude birth rates,
however, is that they afforded the avenue to tests of the
adequacy of enumeration of births in the Health Survey.

CRUDE BIRTH RATES AND TESTS OF UNDER-ENUMERATION OF BIRTHS

An approach to the question of under-enumeration of
births in the Health Survey is afforded through comparisons
of crude birth rates computed from the *Survey* with those
computed from official data for the same cities. The rates
computed from official data pertained to residents, and
available indices were used for corrections for under-
registration.

Special tabulations of the *Survey* data permitted the com-
putation of crude birth rates for 1935 for each of the eighty-
three cities. The basic tabulations were made by color if
the numerical importance of the colored population war-
ranted such subdivision.[1] Although comparable official
rates have not yet been published, the basic data for such
computations were available. The tabulations of registered
births during 1935 among residents of surveyed cities of

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[1] The general practice with *Survey* materials has been to include Mexicans with
the colored rather than with the whites. The only exceptions to this procedure
in this report are those in the present section devoted to crude birth rates for tests
of completeness of enumeration of births. In this instance, in order to secure
comparability with official data, the Mexicans were combined with whites in the
Survey data for Los Angeles and Houston, the two surveyed cities most important
from the standpoint of Mexican inhabitants. This could be done since Mexicans
were kept separate in the tabulations for crude birth rates. The tests of under-
enumeration by color were not attempted for several other cities in which such
comparability of the *Survey* and Census populations appeared to be lacking. *See*
Appendix Table 1.

10,000 population and over were kindly supplied by the Division of Vital Statistics. The estimated populations of the respective cities on July 1, 1935, were secured by arithmetic interpolation of the 1930 and 1940 Census returns.[2]

The number of births during 1935 per 1,000 surveyed and estimated total residents of specific cities are presented, by color, in Appendix Table 1. There are certain limitations to comparisons of crude birth rates from the two series of data as a means of securing indications of the adequacy of enumeration of births in the *Survey*. The comparisons were of necessity restricted to cities of 10,000 population or more, since the tabulations of official data were not afforded for separate cities under that size. For each series, too, the breakdown by color was available only when the character of the population warranted such subdivision. It is also well to remember that differences in crude birth rates may arise from inadequacies in sampling of particular cities on

[2] For the 1930–1940 interpolations, final 1940 Census figures were used in so far as total populations of the desired cities of 10,000 population and over were concerned (Bureau of the Census: Series P-2). Intercensal estimates of population were not needed for surveyed towns under 10,000 population because the numbers of resident births during 1935 were not available from the Division of Vital Statistics. The total populations were broken down by color by two methods:

(a) For the cities of 100,000 population and over, the interpolations were made by color, using for 1940 populations the preliminary estimates of the Bureau of the Census. These estimates were made by application of the color composition, by city, in the 5 per cent random sample to the known total populations. (Sex and Color Composition of Cities of 100,000 Inhabitants or More [Preliminary]: 1940, Series P-5, No. 10, May 10, 1941.) The very close nature of these estimates for the large cities in the *Survey* was confirmed by a later release. (Population by Race and Nativity for Cities of 50,000 or More: 1940, Series P-10, No. 3, March 16, 1942.) The Mexicans were included with the whites in the 1930 data to make the materials comparable with 1940.

(b) For four Southern cities of 10,000–100,000 population, the color ratios from the 1930 Census were applied to the estimated total populations for July 1, 1935. No estimates of population by color were made for surveyed cities of 10,000–100,000 outside the South, since the numbers of resident births during 1935 were not available in this detail, due to the numerical unimportance of the colored populations. For the tests of under-enumeration of births in these cities, the results for total populations have been regarded as relating to whites.

the part of the *Survey* rather than from under-enumeration of births. Differences may also arise from erroneous estimates of 1935 populations of particular cities in so far as the official data are concerned. The two latter types of deficiencies, however, perhaps tend to be ironed out in the groupings of cities by area and size.

The mere comparison of crude birth rates derived from the *Survey* with those from official data, of course, would provide only approximate indications of the completeness of enumeration of births in the *Survey*. It is well known that the official registration of births is not complete, but there is no accurate knowledge of the extent to which specific cities vary in the adequacy of birth registration.

Instead of disregarding the question of under-registration, it was decided to use available indices. On the basis of his own researches and those of Foudray, Whelpton[3] has provided some estimated indices of the completeness of birth registration by state and color for the period 1929–1930. Since these estimates for total states include rural as well as urban areas, and since they refer to a period over ten years past, they probably give a picture of less complete registration of births than would be true for our surveyed cities in 1935. Nevertheless, the indices have been used for making "maximum" upward corrections. In addition, a column has been provided to indicate "medium" corrections, in which three-fourths of the difference between the "uncorrected" rate and that subjected to "maximum" correction is added to the former rate.[4] The data are presented by

[3] Whelpton, 1934, pp. 128–129.

[4] Specifically, the resident crude birth rates computed by the writer from official data for 1935 for specific cities in the *Survey* were adjusted on the basis of the indices of adequacy of birth registration in respective states in which the cities were located. The rates thus adjusted are labeled "maximum" in Appendix Table 2, Columns 6 and 11.

The basis for the "medium" corrections was arbitrary (Appendix Table 2, Columns 5 and 10). It was believed, however, that since the actual rates computed from official data contained no correction for under-registration whatsoever, about

color for specific cities in Appendix Table 2. To secure
average indices by area-size groups, the rates computed by
city from official data were weighted according to the im-
portance of the individual cities in the Health Survey for a
given area-size group. These results are summarized in
Table 5 of the text.

By expressing the Health Survey rates as percentages of
the uncorrected rates computed from official data and also
as percentages of the official rates with "medium" and
"maximum" corrections, something approximating the
range of adequacy of enumeration of births in the Health
Survey may be ascertained. This process has been carried
out by city and color in Appendix Table 3. The results for
area-size groups are summarized in Table 6 of the text.

Because of their consistency in indicating lack of com-
pleteness of enumeration of births in the *Survey*, the data
for individual cities are of interest. In most of the cases
the crude birth rates for white and colored populations in the
Survey were even lower than the uncorrected rates com-
puted from official data. It should be realized, however,
that erratic results for individual cities might sometimes
arise from erroneous *Survey* rates due to atypical sampling
within the city or from erroneous rates computed from the
official data, due to inapplicability of the arithmetic method
of population estimates for specific cities.

For the above reasons the data by area and size of city
are probably more reliable than those for specific cities.
The tests indicated that the average enumeration of white
births in the *Survey* was virtually as adequate (97 + per
cent as high) as birth registration in the Mountain and

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half the difference between these rates and those labeled as "maximum" could be
regarded as rates with *minimum* corrections. On this assumption the rates with
"medium" corrections lie midway between those with "minimum" and "maximum"
corrections. With the data available, the reader is enabled to experiment with
other assumptions.

TABLE 5.—*Crude birth rates from the Health Survey shown in comparison with those computed from official data concerning resident births in the surveyed cities during 1935. The latter are shown with indicated types of correction for under-registration*

Area and Size of City	White				Colored			
	Births per 1,000 Population Computed from				Births per 1,000 Population Computed from			
	Health Survey	Official Data[1] for Cities in the *Survey* with Indicated Correction for Under-Registration			Health Survey	Official Data[1] for Cities in the *Survey* with Indicated Correction for Under-Registration		
		No Correction	"Medium" Correction[2]	"Maximum" Correction[2]		No Correction	"Medium" Correction[2]	"Maximum" Correction[2]
East								
500,000 and Over	13.5	14.5	14.6	14.6	15.5	17.4	17.5	17.5
100,000–500,000[3]	13.1	13.6	14.0	14.1	17.7	20.6	20.9	21.0
25,000–100,000[4]	14.6	16.7	16.8	16 8				
10,000–25,000[4]	14.1	15.5	15.7	15.7				
Central								
500,000 and Over	13.2	14.6	15.3	15.5	16.3	16.7	17.9	18.3
100,000–500,000[3]	13.2	14.6	15.2	15.4	14.5	16.9	18.3	18.7
25,000–100,000[1]	14.7	16.6	17.4	17.7				
10,000–25,000[1]	16.2	18.8	19.6	19.9				
South								
100,000–500,000[3]	12.3	14.8	16.5	17.1	15.3	18.7	21.0	21.7
25,000–100,000[3]	15.5	15.9	17.9	18.5	15.5	18.0	20.3	21.0
10,000–25,000	20.7	22.1	23.8	24.4	20.1	13.8	15.0	15.4
Mountain								
100,000–500,000[1]	19.8	20.1	20.9	21.2				
Pacific								
500,000 and Over	12.6	12.4	12.9	13.1	16.8	14.5	18.4	19.7
100,000–500,000[3]	11.5	11.6	12.1	12.3	10.7	10.8	13.8	14.8
25,000–100,000[4]	11.9	12.3	13.0	13.2				
10,000–25,000[1]	13.7	14.1	14.7	14.9				

[1] Computed from number of resident registered births during 1935 in relation to estimated population July 1, 1935 of the *Survey* cities in the area-size groups.

[2] For method of correction for under-registration, *see* pp. 21–22 and Appendix Table 2.

[3] The following area-size groups are represented by the indicated cities for which comparisons were available by color: *East*, 100,000–500,000: Newark; *Central*, 100,000–500,000: Cincinnati and Columbus; *South*, 100,000–500,000: Atlanta, Birmingham, Houston, New Orleans, and Richmond; *Pacific*, 100,000–500,000: Seattle and Oakland; *South*, 25,000–100,000: Monroe, Louisiana, and Montgomery, Alabama.

[4] Tabulations not made by color, but data for total populations may be regarded as representative of whites due to unimportance of Negroes in surveyed cities of area-size group indicated.

Pacific areas (Table 6). In Eastern and Central cities of 100,000 population and over, and in Southern cities of less

TABLE 6.—*Crude birth rates from the Health Survey expressed as percentages of resident birth rates computed from official data for "Survey" cities, with indicated preliminary correction for under-registration in official data*[1]

Area and Size of City	White			Colored		
	Preliminary Correction of Official Data for Under-Registration			Preliminary Correction of Official Data for Under-Registration		
	No Correction	"Medium" Correction	"Maximum" Correction	No Correction	"Medium" Correction	"Maximum" Correction
East						
500,000 and Over.........	93	92	92	89	89	89
100,000–500,000.........	96	94	93	86	85	84
25,000–100,000.........	87	87	87			
10,000–25,000..........	91	90	90			
Central						
500,000 and Over.........	90	86	85	98	91	89
100,000–500,000.........	90	87	86	86	79	78
25,000–100,000.........	89	84	83			
10,000–25,000	86	83	81			
South						
100,000–500,000.........	83	75	72	82	73	71
25,000–100,000.........	97	87	84	86	76	74
10,000–25,000..........	94	87	85	146	134	131
Mountain						
100,000–500,000....	99	95	93			
Pacific						
500,000 and Over.........	102	98	96	116	91	85
100,000–500,000.........	99	95	93	99	78	72
25,000–100,000.........	97	92	90			
10,000–25,000	97	93	92			

[1] Derived from Appendix Table 3; *see also* Appendix Table 2.

than 100,000, the crude rates computed from *Survey* data were from 90 to 97 per cent of the rates for corresponding

area-size groups computed from registration data. If "medium" corrections are made for under-registration, the situation can be roughly generalized with the statement that enumeration of white births in the *Survey* was perhaps 90–95 per cent complete in the Eastern, Mountain, and Pacific areas, 85–90 per cent complete in the Central areas and in Southern cities below 100,000 population, and around 75 per cent complete in Southern cities of largest size.[5]

The tests of adequacy of enumeration of colored births in the *Survey* were necessarily restricted to cities of 100,000 and over, except in the South. As expected, such enumeration tended to be somewhat poorer than that of white births. As indicated in Table 6, however, it was around 90 per cent complete by "medium" estimates in the Eastern, Central, and Pacific cities of 500,000 and over. In cities of 100,000–500,000, the "medium" estimates extended from 73 per cent in the South to 85 per cent in the East. As among the whites, the enumeration of colored births was poorest in the group of Southern cities of this size. Within this segment of the sample the coverage of white and colored births was equally poor, about three-fourths complete in each case.

The data for specific Southern cities under 100,000 population were too scanty to yield dependable results concerning adequacy of enumeration by color in those areas. The actual "medium" estimates based upon combined data for the two Southern cities of 25,000–100,000 population for which the tests were available indicated that the enumera-

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[5] For the computation of composite indices for whites, the birth rates for total populations were taken as equivalent to those for whites in area-size groups in which the data were not available by color, as a result of the negligible importance of colored populations. These were Eastern, Central, and Pacific cities under 100,000 population, and Mountain, 100,000–500,000 (Salt Lake City). The white and colored rates for Eastern, 100,000–500,000, were based upon the experience of Newark, New Jersey; for Central cities of this size they were based upon the experience of Cincinnati, Ohio, and Columbus, Ohio; and for Pacific cities of this size they were based upon the experience of Seattle, Washington, and Oakland, California. *See* Appendix Tables 2 and 3.

tion of births was poorer for the colored than for the whites. Results of an opposite character were secured for two Southern towns of 10,000–25,000 population, but they should be viewed with skepticism. Since the *Survey* birth rates for the colored populations in these places were considerably higher than those computed from official data, there is the suggestion of an unusually low standard of registration of colored births. Erroneous population estimates for these places may have been involved. On the other hand, the enumeration of colored births in the *Survey* may have been unusually good in the two localities, but at all events the data are too limited to be taken as representative of the combined group of Southern cities of smallest size in the *Survey*.[6]

It is of interest to compare the "medium" estimates of adequacy of enumeration of births in the *Survey* with P. K. Whelpton's estimates of adequacy of enumeration of children under 1 in the 1930 Census. Whelpton's work in this connection was part of the process of building up correction factors for application to 1930 Census data concerning children under 5 per 1,000 women 20–44.[7] According to

[6] The impossibility of securing tests of the adequacy of enumeration of births in cities under 10,000 population and other gaps in the data make it difficult to supply over-all estimates for the entire *Survey*. As nearly as the writer can estimate it, however, it would appear that the enumeration of births was approximately 90 per cent complete for the whites and 80 per cent for the colored. These estimates were derived by weighting the area-size indices according to the area-size distribution of the surveyed white and colored population. For this purpose the indices for towns of 10,000–25,000 were used for the under 25,000 groups. In the case of the colored, 85 per cent completeness was assumed for the surveyed Southern cities under 25,000 population and for other area-size groups for which actual derivations could not be made.

[7] The correction factors for children under 5 used in Whelpton's preparation of data for the National Resources Committee were: "White, 1.05 in all cases; Negro, 1.13 in the United States, 1.11 in the North, 1.135 in the South, and 1.08 in the West." National Resources Committee: POPULATION STATISTICS. 1. NATIONAL DATA. 1937, p. 30.

information from Whelpton,[8] study of the problem for specific states resulted in estimates that, for the total United States, approximately 92 per cent of the white children under 1 and 80 per cent of the colored infants of this age were enumerated. The estimate for whites was used uniformly, but for the Negroes the estimates by area were 85 per cent in the North, 79 per cent in the South, and 91 per cent in the West.

It is therefore apparent that except for the South, the "medium" estimates of adequacy of enumeration of births in the *Survey* were only a little below Whelpton's estimates for the 1930 Census enumeration. It should be remembered, however, that the *Survey* was restricted to cities, whereas the estimates from the Census data pertain to comprehensive areas, rural and urban. The *Survey* would doubtless stand in less favorable light if the estimates from the Census data had been restricted to cities. On the other hand, the *Survey* enumerators were faced with the task of listing all infants born during the preceding year, even if they were dead, whereas the Census enumerators had the easier task of listing only the resident children.

Variations in Crude Birth Rates by Color, Region, and Size of City. Now that some indication of the amount of under-enumeration of births in the *Survey* has been secured, attention may be briefly devoted to variations in crude birth rates themselves by color, area, and size of city. The data for separate cities (Appendix Table 2) indicate that crude birth rates were fairly consistently higher for colored than for white populations. This held true, both for the *Survey* and for rates computed from official data, even before making corrections for under-enumeration or for under-registration. The tendency for crude birth rates of the colored to surpass those of the whites probably has helped to account for popular attitudes regarding the high pro-

[8] Letters July 6, 1939 and August 13, 1941.

lificacy of Negroes. As will be discussed later, virtually the opposite situation is found when the comparison is put on the basis of more refined indices of fertility.

Due to the 1940 Census policy of classifying Mexicans with whites, there may soon be a dearth of fertility data for Mexicans in this country. It is of interest, therefore, to note results from the *Survey* available in separate form for Mexicans in Los Angeles and in Houston. The data for Orientals were also separable for the former city. As indicated in the table below,[9] the crude birth rates of Mexicans, uncorrected for under-enumeration, was 28.5 in Los Angeles and 28.2 in Houston. The rate was twice as high as that for Negroes in Los Angeles and over twice as high in Houston. The rate for Orientals in Los Angeles was 19.4, about midway between that for Mexicans and Negroes.[10]

Except for the unduly low rate for Southern cities of largest size, the crude rates derived from the *Survey* conform fairly closely to the patterns of variation by region and size of city observed from rates computed from official data

[9] Crude birth rates among racial groups, considered separately and in specified combinations by color. Health Survey data for Los Angeles and Houston.

Color or Race	Surveyed Population		Crude Birth Rate	
	Los Angeles	Houston	Los ¡Angeles	Houston
White	63,841	29,508	10.7	12.7
Mexican	7,928	2,234	28.5	28.2
Oriental	2,583	—	19.4	—
Negro....	2,355	8,406	14.0	11.3
Mexicans with Whites				
White.....	71,769	31,742	12.6	13.8
Colored	4,938	8,406	16.8	11.3
Mexicans with Colored				
White	63,841	29,508	10.7	12.7
Colored.......	12,866	10,640	24.0	14.8

[10] Rates based on 1930 Census data for the United States and concerning children under 5 per 1,000 females 20–44 have been previously published as follows for several racial groups: White, 481; Negro, 497; Mexican, 906; Chinese, 1,051; and Japanese, 824. *See* Lorimer and Osborn, 1934, p. 43.

(Table 5).   The "medium" corrections of registration data might be considered.   For whites in cities of comparable size the crude birth rates were lowest on the Pacific Coast, highest in the Mountain areas, and next highest in the South. This held true for total regions and for size-groups considered separately.   For the colored, the crude birth rates subjected to "medium" corrections tended to be a little higher in Southern cities than in cities of other areas.[11]

Within each area the crude birth rates for whites tended to be lower in large cities than in small cities.   This expected type of relationship, however, was not manifested with complete consistency, except in the Central and Southern areas.   The lack of consistency may have been due to chance factors, since the size-groups were represented only by selected cities.

MARITAL FERTILITY RATES IN THE HEALTH SURVEY

Standardized Marital Fertility Rates by Nativity, Color, Region, and Size of City.   Attention may now be turned to standardized[12] fertility rates during 1935 among married women 15–44 years of age.   These data relate to 375,658 wives of childbearing age in the Health Survey, classified by nativity, color, and age, and by area and size of city. Separate tabulations were made for each of the ten surveyed cities of 500,000 population and over.

[11] For these comparisons the Mexicans were included with the whites.   When the Mexicans are included with the colored, however, as in the marital fertility data presented in the following section, the Pacific Coast stands highest with respect to fertility rates of colored women.   For crude birth rates by color in Los Angeles under different classifications of the Mexicans, *see* footnote 9.

[12] The direct method of standardizing for age was used throughout this report. With the exception of those presented in Table 42, all standardized fertility rates for married women 15–44 were computed by weighting the age-specific rates according to the age distribution of *all* married women 15–44 in the United States, as computed from the 1930 Census.   In the exception, standardization was based upon *white* wives 15–44 (*see* p. 185, footnote 9).   The 1930 Census distribution of all wives 25–44 was used in standardizing the fertility rates for wives of that age in Tables 16, 24, and 32.

There are two situations that stand out in the analysis of marital fertility rates by nativity and color. One is that the fertility rates of foreign-white married women are now only a little above those for native-white married women comparable with respect to age and urban residence.[13] The other is that, although crude birth rates tended to be higher among colored than among white populations, the opposite situation tended to prevail when the analysis was restricted to married women of childbearing age.

In the combined data for all urban areas included in the *Survey*, the standardized birth rate in 1935 per 1,000 wives of childbearing age was 96 among native whites, 111 among foreign whites, and 86 among the colored. The average rate for foreign whites was, therefore, about 16 per cent higher than that for native whites of similar age, and the average rate for native whites, in turn, surpassed that for the colored wives by 12 per cent. Due to differences in areal distribution of the native-white, foreign-white, and colored groups, more valid comparisons are those made separately by area and size. It should also be stated that the comparisons by color for the total sample were based upon the actual marital fertility rates with no attempt at correction for under-enumeration of births. It was believed that the influence of under-enumeration could be appraised with greater confidence for area-size groups considered separately.

Comparisons of fertility rates by nativity and color and

[13] A description of present-day differences in birth rates by nativity would be incomplete without calling attention to the diminishing numerical importance and changing age structure of foreign-white married women in our population. Since the enactment of immigration restrictions, foreign-white wives have passed into the older ages of, and out of, the childbearing period. Only 4 per cent of the foreign-white wives enumerated were under 25 years of age as compared with 17 per cent among the native whites and 20 per cent among the colored. The actual birth rates unadjusted for age were substantially lower among the foreign-white wives of childbearing age than among the native whites or colored, being 69, 93, and 88, respectively.
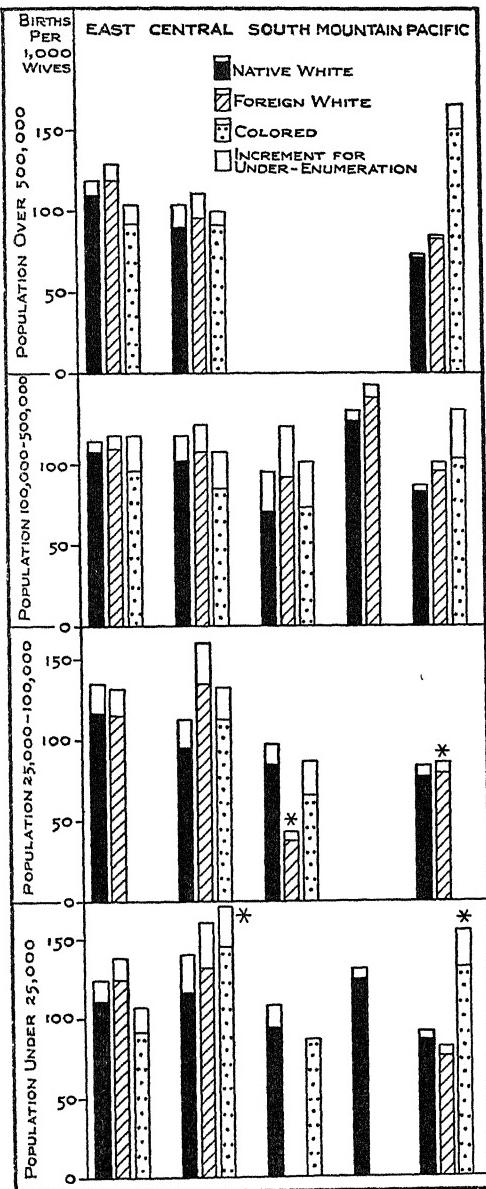
FIGURE 1.—*Fertility rates in 1935 among wives 15–44 years of age in the Health Survey; by nativity and color, and by area and size of city.* "Medium" *corrections shown for under-enumeration of births*

Rates standardized for age.   *See* Table 7.
* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

by broad region and size of community are presented in Table 7 and Figure 1. These show the rates actually observed and also subjected to "medium" corrections on the basis of Table 6.[14] In the four groups of Eastern and Central cities of 100,000 population or more, where the foreign whites are numerically most important, the standardized birth rates of foreign-white wives of childbearing age ranged from only 2 to 8 per cent higher than those of the native whites.[15] Wider discrepancies were found in several of the other groups of cities.

Except on the Pacific Coast, where Mexicans and yellow races were relatively important, the standardized marital fertility rates were in most instances lower among the colored than among the native-white wives. (*See* footnote 1, p. 19.) This held true even after corrections were made for under-enumeration of births.

With respect to regional variations in the fertility rates of native-white wives, the lowest rates on the Pacific Coast and highest in the Mountain area (Utah) are in accord with expectations. As indicated in Table 7, the low position of the rates for white and colored married women in the South was due in considerable part to under-enumeration of births. "Medium" corrections for this factor raised the rates for Southern white wives much above those for comparable groups in the Pacific area. The rates for white and colored

[14] Acknowledgement is made of the unsatisfactory elements involved in applying the correction factors derived from crude birth rates to marital fertility rates. Since the enumeration of illegitimate births may tend to be less adequate than that of births to married women, the correction factors applied to marital fertility rates of the colored wives may be too strong.

[15] The differences by nativity in standardized fertility rates of the white married women would probably be somewhat greater if account could be taken of differential under-enumeration of births, by nativity. In the foregoing tests on the basis of crude birth rates, however, it was not possible to separate the foreign whites from the native whites. For correcting marital fertility rates the same factors were used for the two groups. The rates for foreign whites would also have been somewhat higher in relation to those of native whites if single years of age rather than five-year age groups had been used in the standardization.

TABLE 7.—*Fertility rates in 1935 among wives of childbearing age in the Health Survey; by nativity and color, and by area and size of city. Actual and corrected according to "medium" estimates of under-enumeration*

Rates standardized for age

Area and Size of City	Live Births per 1,000 Wives						Number of Wives		
	Actual			Corrected[1]					
	Native White	Foreign White	Colored	Native White	Foreign White	Colored	Native White	Foreign White	Colored
East									
500,000 and Over....	111	120	93	120	130	105	53,922	21,502	5,800
100,000–500,000.....	109	111	97	116	119	115	16,706	5,356	1,339
25,000–100,000	118	116		136	133		7,810	1,347	73
Under 25,000[2].......	111	124	91	124	138	107 †	9,781	1,382	416
Central									
500,000 and Over. ..	91	97	92	105	112	101	45,595	13,681	6,398
100,000–500,000....	103	109	86	119	126	109	26,573	2,240	1,489
25,000–100,000. .	96	136	114	114	161	134†	17,712	712	593
Under 25,000[2]	116	132	145*	140	160	171†	9,813	479	142
South									
100,000–500,000....	72	93	75	97	125	103	28,855	604	12,337
25,000–100,000	86	38*	67	99	44*	88	17,984	160	5,268
Under 25,000[2].......	94		87	108		87**	8,332	58	3,201
Mountain									
100,000–500,000.....	128	143		135	151		3,735	348	33
Under 25,000........	124			131††			1,432	98	35
Pacific									
500,000 and Over....	72	84	153	74	86	168	9,012	1,197	1,846
100,000–500,000.....	84	97	105	88	102	135	14,560	1,942	333
25,000–100,000.....	78	80*		85	87*		3,420	147	7
Under 25,000[2].......	86	76	132*	92	82	155*†	9,004	648	201

[1] *See* Table 6, for "medium" estimates of per cent of births enumerated.

[2] The estimates of under-enumeration are based upon cities of 10,000–25,000 in the *Survey*, though applied to average rates for all surveyed cities under 25,000.

* Based on 100–299 wives. Rates based on fewer than 100 are not shown.

† Enumeration of births was assumed to be 85 per cent complete.

** No correction made since crude birth rate for *Survey* exceeded that computed from official data and adjusted for under-registration.

†† Estimate of under-enumeration assumed to be the same as that for cities over 100,000 in the Mountain region.

wives in the South, however, remained somewhat below those for comparable groups in Eastern and Central areas after "medium" corrections were made for under-enumeration. This is an interesting situation because, as previously noted, even the uncorrected *crude* birth rates were frequently higher for Southern cities than for Eastern and Central cities of comparable size. The crude birth rates, of course, are influenced by such factors as age, proportions married, age at marriage, sex ratios, etc. With the exception of age at marriage, these factors are held virtually constant in marital fertility rates standardized for age. Spurious factors may be involved in the sample, but there is the suggestion that Southern cities do not loom high in comparison with Eastern and Central cities when standardized marital fertility rates are considered.[16]

In regard to size of city, the actual and the corrected fertility rates tended to be lower in cities of 100,000 or more than in cities of smaller size, but there was little further refinement in this type of relationship. The lack of complete manifestation of this association is possibly due to the limited number of cities in the respective groups by size.

Separate tabulations were made for the ten surveyed cities having populations of 500,000 or over in 1930. The observed and the corrected fertility rates are presented for each city by nativity and color in Table 8 and Figure 2. In only three of these cities did the standardized rates for the foreign whites (with "medium" corrections for under-enumeration) surpass those for the native whites by 15 per cent or more. These were Philadelphia, 37 per cent; St. Louis, 23 per cent; and Los Angeles, 16 per cent. The rates

[16] Preliminary data from the 1940 Census also indicate that there was little variation by region in net reproduction rates of urban populations during 1935-1940. With the exception of the rate for urban populations in the Mountain area (relatively high, but also under replacement requirements), urban net reproduction rates varied only from 0.69 to 0.78 by geographic division. *See Population Index*, July, 1941, p. 167.

for foreign whites in New York and Boston exceeded those for native whites by 10 and 11 per cent, respectively. In the remaining cities the rates for foreign whites differed from those for native whites by less than 10 per cent.

With respect to fertility of colored wives in these cities, it is seen that except in Los Angeles, where Mexicans and

TABLE 8.—*Fertility rates in 1935 among wives of childbearing age enumerated in specified cities of the Health Survey; by nativity and color. Actual and corrected according to "medium" estimates of under-enumeration*

Rates standardized for age

City	Live Births per 1,000 Wives						Number of Wives		
	Actual			Corrected[1]					
	Native White	Foreign White	Colored	Native White	Foreign White	Colored	Native White	Foreign White	Colored
Boston....	127	141	92	152	168	105	8,330	4,185	462
Buffalo	118	115	122	123	120	122*	10,216	2,381	378
New York	103	113	80	105	116	94	15,641	10,376	1,493
Philadelphia	102	139	88	112	153	107	11,391	3,170	2,536
Pittsburgh	112	103	104	121	112	107	8,344	1,390	931
Chicago...	94	91	101	105	101	103	15,131	4,649	1,853
Cleveland..	89	94	90	108	114	105	11,733	4,731	1,623
Detroit....	100	105	84	106	111	85	9,053	3,495	955
St. Louis..	82	101	88	104	128	103	9,678	806	1,967
Los Angeles...........	72	84	153	74	86	168	9,012	1,197	1,846

[1] *See* Appendix Table 3, columns 3 and 6, for "medium" estimates of per cent of births enumerated.

* No correction made since crude rate for *Survey* exceeded that computed from official data and adjusted for under-registration.

yellow races constituted the majority of the colored women in the sample, the observed rates were either approximately the same as, or substantially lower than, those for native whites. With "medium" corrections for under-enumeration the rates for colored wives were lower than those for native-white wives by 31 per cent in Boston; 20 per cent in Detroit; 12 per cent in Pittsburgh; and 10 per cent in New York.

In the remaining cities (except Los Angeles) the rates for
the colored and native-white wives were virtually the same;
the differences were less than 5 per cent.

Age-Specific Rates. Further characteristics of the com-
parisons by nativity and color emerge from the age-specific
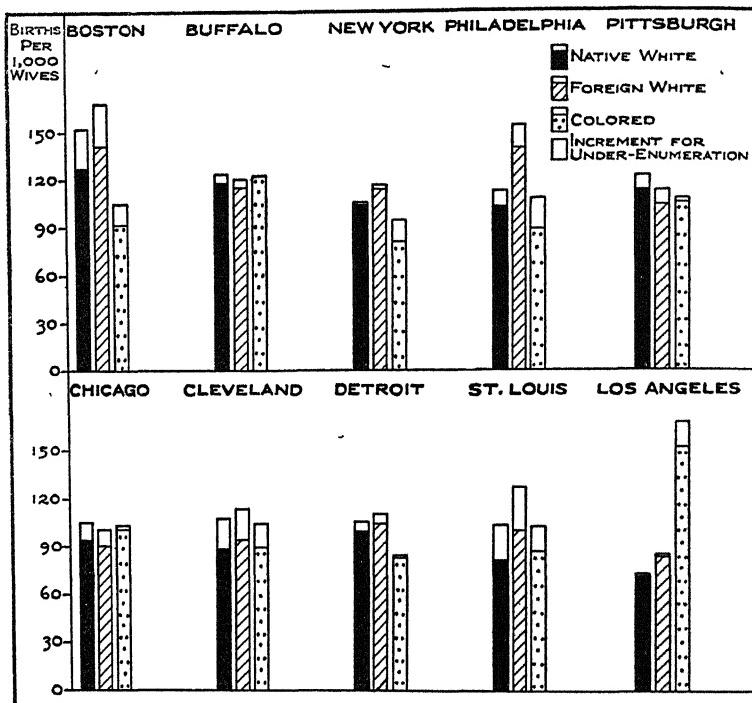
FIGURE 2.—*Fertility rates in 1935 among wives 15–44 years of age enumerated in
specific cities of the Health Survey, by nativity and color. "Medium"
corrections shown for under-enumeration of births*
Rates standardized for age. *See* Table 8.

rates. These rates, uncorrected for under-enumeration, are
presented in Table 9 and Figure 3 for married women of
childbearing age in the total *Survey*. The unique character
of the age-fertility relationship among the colored wives
may be noted. At youngest ages, 15–19, the rate for colored

TABLE 9.—*Age-specific fertility rates in 1935 among wives in the Health Survey; by nativity and color*

Age of Wife	Live Births per 1,000 Wives			Number of Wives		
	White		Colored	White		Colored
	Native	Foreign		Native	Foreign	
Total 15–44.....	96*	111*	86*	284,246	51,901	39,511
15–19	249	229**	301	6,839	83	1,640
20–24	196	218	175	42,280	2,020	6,322
25–29	130	158	94	65,278	6,501	9,102
30–34	81	96	69	60,897	10,693	8,117
35–39	40	50	42	58,920	15,197	8,727
40–44	15	19	17	50,032	17,407	5,603

* Rate standardized for age on the basis of the age distribution of all married women 15–44 in the United States, as computed from the 1930 Census. The unstandardized rates were 93 for native whites, 69 for foreign whites, and 88 for the colored wives.

** This rate, based on 83 cases, is not shown in Figure 3.
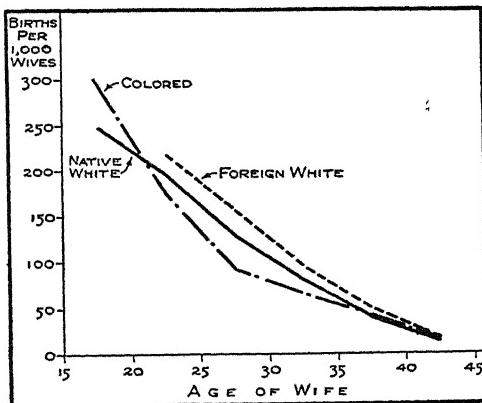
FIGURE 3.—*Age-specific fertility rates in 1935 among wives 15–44 years of age in the Health Survey; by nativity and color*
See Table 9

wives was much higher than for whites. Throughout ages 20–34, however, the rates for colored wives fell conspicuously below those for native whites, and at these same ages the

rates for foreign whites surpassed those of native whites by
11–22 per cent.   During ages 35–44 there was not much
difference by nativity and color in the low levels of fertility.

The concave shape of the age-specific fertility curve of
Negro married women has been commented upon by other
writers.   It is strongly evident in the annual fertility rates
of married women by age, nativity, and color, compiled
by P. K. Whelpton for the National Resources Committee.[17]
The high initial fertility of Negroes in comparison with that
of whites has been found to be even more prominent when
the rates relate not simply to married women but to all
females of youngest ages.[18]   The factors involved in this
instance are the relatively high rates of illegitimacy and
relatively high proportions married as well as relatively high
rates of marital fertility among Negro females 15–19 years
of age.   These same factors, in addition to any influences of
age distribution and sex ratios, are doubtless important
ones in the higher crude birth rates among the colored than
among the white populations in specific cities.

The *Survey* provides no data on childlessness, since the
indices of fertility relate to births during one year.   In his
analysis of family data from previously unpublished 1930
Census material for the East North Central states, however,
Notestein provided striking evidence of the importance of
childlessness in the low fertility levels of urban Negro mar-
riages.[19]   His data related to average number of resident
children under 10 years of age per marriage of 5–9 years'
duration, classified by nativity and color of the head, by
type of community, and by value of the home.   In all types
of communities, except the rural-farm, the fertility levels of
Negro marriages fell below those for whites.   When the

[17] National Resources Committee: POPULATION STATISTICS.   2. STATE DATA.
1937, pp. 3–8.
   [18] *Ibid.*, pp. 3–8.
   [19] Notestein, 1938, pp. 180–187.

comparisons were made on the basis of number of children under 10 per *mother* married 5–9 years, however, the fertility indices were consistently higher for Negroes than for whites in each type of community.   This reversal was due to the large extent of childlessness among urban Negro marriages. In the combined urban areas of the East North Central states, the proportions of marriages of 5–9 years' duration without children under 10 in residence were 44.7 per cent among Negroes, 22.7 per cent among native whites, and 18.0 per cent among foreign whites.[20]

There is need for a study of the factors underlying the high proportion of childlessness among urban Negro marriages.   Pearl's[21] data for patients of urban maternity hospitals suggested that contraception is practiced little and badly among Negroes, but it should be remembered that childless women were by definition virtually ruled out of this sample.   Beebe's[22] study indicated the irrelevance of contraception in the lower birth rate for Negro wives than for white wives in a small but well-controlled sample drawn from bituminous coal-mining sections of Logan County, West Virginia.   Despite their limitations, the above data

[20] Notestein cautions the reader that since the data refer to living children, the Negro-white discrepancy in proportions of homes without children was increased somewhat by higher mortality rates among Negro children. He also emphasized that some future births would occur to "childless" marriages of 5–9 years' duration.

The reality of high proportions of childlessness among Negro urban marriages, however, has been confirmed by data relating to total number of children *ever* born among wives of *completed* fertility. Such data have been collected by the Milbank Memorial Fund through family surveys; for Negroes in selected areas of Harlem and for whites in various cities. From the Harlem survey of 2,300 Negro families a side analysis was restricted to 139 native-born Negro wives 40 years of age and over whose marriages were unbroken and were spent in Northern cities during the reproductive period. Among these, 44 per cent were childless. Comparable percentages for 228 native-white wives of skilled workers in Columbus and for 305 in Syracuse were 18 and 22, respectively.

See Kiser (October) 1938, p. 379.

[21] Pearl, 1939, pp. 192–224.

[22] Beebe, 1941.

indirectly suggest that actual sterility or pregnancy wastage, or both, are important factors in childlessness among Negroes. Strong support for such an inference is afforded by the relatively high rate of venereal diseases and of still-births[23] in the colored population. As stated before, however, a study aimed specifically at the determination of the relative importance of voluntary and involuntary child-lessness among Negroes is needed.[24] It may be that the high rentals, the high proportion of colored married women who work outside the home, and other economic pressures experienced by Negroes in cities force resort to more frequent contraception and illegal abortion than is ordinarily believed to be the case.

SUMMARY

The problem of under-enumeration of births in the Health Survey was studied by comparing crude birth rates derived from the *Survey* with resident crude birth rates for the same cities computed from official data and raised according to described indices of under-registration. The tests indicated that enumeration of white births in the *Survey* was probably around 90–95 per cent complete in Eastern, Mountain, and Pacific areas; 85–90 per cent complete in Central areas and in Southern cities of smaller size; but only about 75 per cent complete in the group of Southern cities of largest size. Enumeration of colored births tended to be somewhat poorer than that of white births, but in Eastern, Central, and Pacific

[23] Pregnancy wastage among white and colored women in the *Survey* is discussed in a later chaper. It may be noted here that the general rate of stillbirths is apparently over twice as high for Negroes as for whites. In 1939 there were 28.2 stillbirths reported per 1,000 live births among whites and 60.8 among Negroes. U. S. Bureau of the Census: *Vital Statistics—Special Reports*, November 28, 1940, xii, 8, p. 131.

[24] A study of a group of white wives in New York City who were never pregnant after ten years of marriage indicated that permanent childlessness among this group was in large part involuntary. Kiser (January) 1939.

cities of largest size (500,000 and over) it was almost 90 per cent complete by "medium" estimates, or almost as good as that of the whites.   Furthermore, the least adequate enumeration, that in the Southern cities of largest size, was not much worse for colored than for white births.

The fertility rates of foreign-white married women now seem to be but little above those for native-white wives of similar age and urban residence.   From the standpoint of sharpness of decline, the reduction in the fertility rates of foreign whites is one of the most interesting demographic trends during the past twenty years.   It is perhaps the most striking example at hand of the diminution of group differences in fertility in recent years.   On the other hand, the foreign whites have become a progressively less important element in our population since the passage of immigration restrictions in the 'twenties.   The size of the birth rate of this diminishing and rapidly aging segment of our population is, therefore, of only minor significance from a demographic point of view.   It remains to be seen, of course, what our immigration policies will be in a post-war world.

Along with the decreasing numbers of foreign whites in our cities during the past twenty years has been the increasing importance of urban Negroes, due to cityward migration. Added interest has therefore been attached to fertility rates of city-dwelling colored people.   In this connection the *Survey* data indicated an interesting situation.   Crude birth rates tended to be higher among Negroes than among whites in the same cities, but the opposite was generally found in so far as standardized fertility rates among married women of childbearing age were concerned.   The latter situation was true after making adjustments for under-enumeration.

The relatively high crude birth rates among the Negroes may arise from numerous factors, but important among these

are the high rates of illegitimacy, the high proportions married at youngest ages, and the high rates of marital fertility at youngest ages.

Other investigations have indicated that the generally low rate of marital fertility among urban Negroes accrues from a high rate of childless families. According to these studies, from 40 to 50 per cent of urban Negro marriages are fruitless. Percentages of this order are over twice as high as those generally found among urban white marriages. The relatively high incidence of venereal infections, the high proportion of stillbirths, and the probability that contraception is practiced little or ineffectively among urban Negroes, collectively suggest that much of the childlessness of urban Negro marriages is involuntary. There is need, however, for direct study of this question.

MARITAL FERTILITY RATES IN RELATION TO OCCUPATIONAL CLASS OF THE HEAD

As PREVIOUSLY stated, the schedules used in the *Survey* provided for the recording of the *usual* or *customary* occupation of each surveyed individual regardless of his occupational or employment status at the time of the study.[1] The record was in the form of a double entry to indicate (a) specific type of work, and (b) type of industry with which the work was connected.

The punch card for each surveyed individual indicated not only his own specific occupation and occupational class, but also the occupational class of the head of the household. It was therefore possible to analyze fertility rates of married women according to the occupational status of the head. A more suitable classification would have been one based invariably upon occupational status of the *husband*. Tests have indicated, however, that in samples restricted to *married women* of childbearing age there were relatively few cases in which the women were not wives of the heads of households. The chief exceptions were relatives, mainly daughters and daughters-in-law living in homes of parents, and in the test samples they collectively formed only 6.7

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[1] For purposes of the *Survey* the "usual" occupation was defined as "the one in which a person has the most skill. Ordinarily he will have spent most time at this occupation." These criteria were utilized for persons who were not working at the time of the *Survey* and for those engaged in work of a type not regarded as customary. Only persons in the following classes were coded as having "no usual occupation": (a) housewives with no usual gainful employment; (b) preschool children; (c) persons attending regular school sessions; and (d) other persons who were *never* gainfully employed. National Health Survey: Manual of Instructions for Enumerators. H.S. Form 14 (B-1019) October 7, 1935, p. 14.

per cent of the native-white married women, 2.5 per cent of the foreign-white married women, and 6.2 per cent of the colored married women.[2] There was little variation by occupational class of the head in the proportion of cases in which the married woman was a relative, instead of wife, of the head.[3]

A more incongruous but numerically less important type of exception was that of resident female servants being classified according to the occupational status of the head of the household. This arose from the procedure of repeating

[2] As discussed in Chapter VI, however, certain selective factors are introduced by secondary families in the cross-classification by occupational status of the head and total family income. *See* pp. 164–177.

[3] From duplicate punch cards for 22,372 white married women 15–44 years of age in the *Survey* for Newark, Fall River, St. Paul, and Oakland, and for 972 colored married women of childbearing age in Newark, the following percentage distributions were derived regarding relation of the women to the heads in the households enumerated.

Relationship to Head	Total[a]	Profes- sional	Business	Skilled	Unskilled	Total[a]	Profes- sional	Business	Skilled	Unskilled
	Total White					Total Colored				
Total................	100.1	100.0	100.1	100.0	100.0	100.0			99.9	100.0
Wife.	93.4	95.9	95.7	94.9	92.8	88.7			93.1	91.2
Relative.....	5.9	3.3	3.8	4.8	6.4	6.2			4.8	4.2
Servant..	0.1	0.6	0.1	c		1.0				
Other Unrelated.	0.3	0.2	0.3	0.2	0.5	3.7			2.0	4.6
Head[b].	0.4		0.2	0.1	0.3	0.4				
Number Involved	22,372	1,209	7,488	11,198	1,934	972	23[d]	42[d]	393	477
	Native White					Foreign White				
Total	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0
Wife..	92.5	96.3	95.3	94.0	90.8	96.7	92.4	97.6	97.8	96.8
Relative....	6.7	3.1	4.1	5.6	8.3	2.5	5.1	2.0	1.9	2.7
Servant.	0.1	0.4	0.1			0.2	2.5	0.2	c	
Other Unrelated	0.3	0.2	0.3	0.2	0.6	0.1		0.1	0.1	0.2
Head[b]..........	0.4		0.2	0.1	0.3	0.5		0.1	0.2	0.3
Number Involved..	17,728	1,091	6,316	8,573	1,279	4,644	118	1,172	2,625	655

[a] Includes unknown occupation.
[b] That is, the woman herself was designated as the head.
[c] Less than 0.1 per cent.
[d] Sample too small to warrant percentage distribution.

the occupational class of the head and family-income status in the "family" section of the punch card for each resident of the household. Servants, however, were included in the household roster of their employers only if they "slept in." Also, servant married couples who maintained separate households on the premises of their employers were enumerated as separate households.[4] Thus, in a sample restricted to married women[5] of childbearing age few cases would be expected in which servants would be thrown into the occupational class of the employer. In the test sample, only one-tenth of 1 per cent of the native-white married women, two-tenths of 1 per cent of the foreign-white married women, and 1 per cent of the colored married women indicated that their relationship to the household head was that of servant. As expected, these cases were almost completely confined to families in which the head was a professional or business man, but their proportionate importance even within these classes was too small to have much bearing on class differences in fertility according to occupational status of the head.

For coding, the specific occupational code developed for the 1930 Census tabulations was used.[6] This permitted the simultaneous coding of specific occupation and occupational class. The latter was based upon Dr. Alba M. Edwards' system of classification for the 1930 Census returns.[7]

[4] These women, like wives of servants whose households were not on the premises of employers, would be thrown into the "servant" class on the basis of the occupational status of the head. As indicated in a later section, these groups were united with the unskilled laborers for the analyses of fertility rates according to occupational status of the head.

[5] In analyses of reproduction rates according to income, involving all females of childbearing age regardless of marital status, the members of the household unrelated to the head were eliminated. See p. 181.

[6] See: (a) U. S. Bureau of the Census: ALPHABETICAL INDEX OF OCCUPATIONS, Fifteenth Census of the United States, 1930.

(b) U. S. Bureau of the Census: CLASSIFIED INDEX OF OCCUPATIONS, Fifteenth Census of the United States, 1930.

[7] Edwards, A. M., 1938.

For purposes of the fertility tabulations, certain detailed occupational classes were consolidated to yield four broad groups,[8] as follows:

Consolidations for Fertility Tabulations	*Original Coding*
Professional	Professional Persons
Business	Wholesale and Retail Dealers Other Proprietors, Managers, and Officials Clerks, Salesmen, and Kindred Workers
Skilled and Semiskilled	Skilled Workers and Foremen Semiskilled Workers in Manufacturing Other Semiskilled
Unskilled and Servants	Unskilled Workers, except Farm Laborers and Servants Servants
Other, Unknown, and None	Farmers Farm Laborers No Occupation or Unknown Occupation

It will be of interest to examine the distribution of married women of childbearing age by occupational status of the head and by nativity, color, and age of the wife.

OCCUPATIONAL COMPOSITION OF THE SAMPLE

The occupational composition of the sample by nativity, color, and age is shown in Figure 4, based upon Table 10.

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[8] In planning the tabulations it was decided to sacrifice detail in classification by occupational status in order to make it feasible to secure breakdowns of each broad occupational class by education and by family income. *See* Chapter VI.

In one preliminary article, based upon analysis from duplicate punch cards and special tabulations for five surveyed cities, fertility rates were presented for the more detailed occupational classes: professional, proprietors, clerks and salesmen, skilled workers, semiskilled not in manufacturing, semiskilled in manufacturing, and unskilled and servants. *See* Kiser (January) 1938.

For the small rural sample, separately analyzed in Chapter VIII, the tabulating plans permitted separation of farmers and farm laborers, and, for parts of the rural sample, it was practical to subdivide farmers (exclusive of farm laborers) on the basis of tenure of the home.

(For numerical distributions *see* Appendix Table 4.) At the top of Figure 4, the distributions are given, by nativity and color, for all wives of childbearing age. Immediately noticeable is the fact that the proportions in "white-collar"

TABLE 10.—*Percentage distribution of wives of childbearing age in the Health Survey, according to occupational class of the head; by nativity, color, and age of wife*[1]

Nativity, Color and Age of Wife	Total	Professional	Business	Skilled and Semiskilled	Unskilled
Native White					
Total 15–44 ..	100.0	6.7	37.4	47.4	8.5
15–19	99.9	2.4	23.2	56.6	17.7
20–24	100.0	4.7	31.1	52.2	12.0
25–29	100.0	6.9	36.6	47.8	8.7
30–34 .	100.1	7.5	38.4	46.5	7.7
35–39	99.9	7.2	40.5	45.3	6.9
40–44	100.1	7.3	40.4	45.3	7.1
Foreign White					
Total 15–44	100.1	3.3	26.6	53.4	16.8
15–19	100.0	.0	25.6	52.6	21.8
20–24	100.0	4.3	28.0	53.7	14.0
25–29	99.9	4.5	28.2	53.5	13.7
30–34	100.1	3.8	28.9	52.6	14.8
35–39	100.0	3.1	26.7	53.6	16.6
40–44	99.9	2.6	24.2	53.6	,19.5
Colored					
Total 15–44........	100.1	2.4	7.9	37.0	52.8
15–19	99.9	1.0	5.3	37.2	56.4
20–24	100.0	1.9	6.9	37.5	53.7
25–29	100.0	2.3	7.3	37.5	52.9
30–34	100.1	2.4	8.2	38.7	50.8
35–39	100.0	2.5	8.1	36.1	53.3
40–44	100.0	3.1	10.1	34.2	52.6

[1] *See* Appendix Table 4 for numerical distribution.

pursuits were highest among the native-white groups and lowest among the colored populations. The proportions in the combined professional and business classes were: native whites, 44 per cent; foreign whites, 30 per cent; and

colored, 10 per cent. Over half (53 per cent) of the heads of
colored families were in unskilled jobs as compared with
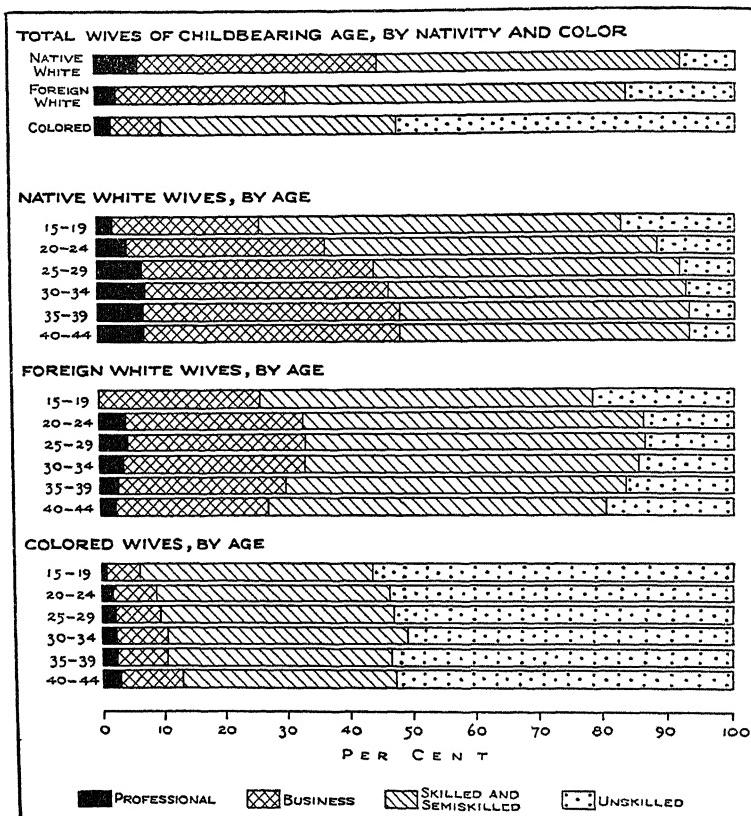
FIGURE 4.—*Distribution of wives 15–44 years of age, according to occupational
class of the head; by nativity, color, and age of the wife*
Surveyed cities combined. *See* Table 10

about 17 per cent among the foreign whites and 9 per cent
among the native whites.

Distributions of the above order were fairly constant in the
breakdown by area and size of city,[9] Appendix Table 5.

[9] Individual cities, of course, frequently attract workers of given types. For
Detroit the proportion of skilled and semiskilled workers was found to be rela-

Within native-white groups in large cities the business class was somewhat less important in Eastern and Central areas than in other regions.   Among the few foreign whites in the South the proportions in business were unusually high and the proportions in laboring pursuits unusually low.   Among the urban colored, low occupational status was manifested to about the same extent in all regions except the Pacific.[10] On the whole, however, there appeared to be little difference of a purely regional nature in the occupational composition of the sample.

With respect to size of city, there was some tendency for the proportion of white unskilled laborers to be highest in cities under 25,000 population, but there was little further manifestation of this type of relationship.   As previously stated, the *Survey* was somewhat under-represented by small cities, but statistical adjustment for this factor yielded little change in the actual occupational composition of the total sample for given nativity-color groups.[11]

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tively high within each color-nativity group. In Pittsburgh the proportion of unskilled laborers was relatively high.

[10] In Los Angeles, which dominated the Pacific sample of colored wives, the proportion in the business class (by head's occupation) was exceptionally high and the proportion in the unskilled class was correspondingly low. This situation may have been due to deficiencies in sampling or it may have been associated with the non-Negro elements of the colored population enumerated in that city.

[11] On p. 50, in Adjustment A, the occupational distributions for the respective city-sizes were weighted according to the city-size distribution of the 1930 urban populations of each nativity and color. This indicated virtually no influence of under-representation of small cities on the occupational composition of each nativity-color group.

In Adjustment B, the total city-size distribution of the total 1930 urban population was used as a common standard for the three nativity-color groups. This indicated that the differences by nativity and color in occupational distributions remain virtually unchanged when differences in size of city are ruled out.

As indicated in Adjustment C, the differences by nativity and color in occupational composition of wives 15–44 remained about the same when standardized for age. The process was that of weighting the age-specific data for each nativity-color group according to the age-distribution of all urban married women 15–44 years of age in the 1930 Census:

The above distributions are therefore probably fairly representative of comparable elements in the total urban population. It is important to keep in mind, however, that they refer to occupational class of the heads of households represented by married women 15–44 years of age. This means that they refer essentially to occupational class of married men around 20–50 years of age, and of given nativity and color. This is mentioned because conventional distributions of gainfully employed males 10 or 14 years of age and over generally show higher proportions in the unskilled class than do those restricted to married men.[12]

Further examination of Figure 4 reveals several points of interest regarding occupational class in relation to age. Among the native whites the proportions in the white-collar classes increased sharply with advancing age up to age 40.[13]

Distribution of wives 15–44 years of age by occupational class of the head. Actual, and with adjustments for city-size and age, by nativity and color of the wife

Nativity, Color, and Type of Adjustment	Total	Profes-sional	Business	Skilled and Semi-skilled	Unskilled
Native White					
Unadjusted	100.0	6.7	37.4	47.4	8.5
Adjustment A (City–Size)	100.0	6.6	36.2	47.4	9.8
Adjustment B (City–Size).	100.1	6.7	36.3	47.4	9.7
Adjustment C (Age)....	99.9	6.6	37.0	47.6	8.7
Foreign White					
Unadjusted	100.1	3.3	26.6	53.4	16.8
Adjustment A (City–Size)	100.0	3.3	26.2	52.0	18.5
Adjustment B (City–Size)	100.0	3.3	26.0	50.8	19.9
Adjustment C (Age)	99.9	3.5	27.2	53.3	15.9
Colored					
Unadjusted	100.1	2.4	7.9	37.0	52.8
Adjustment A (City–Size)	99.9	2.4	7.2	37.3	53.0
Adjustment B (City–Size)	100.0	2.5	7.4	37.3	52.8
Adjustment C (Age).	99.9	2.4	8.0	36.8	52.7

[12] *Cf.* Edwards, A. M., 1938.

See also U. S. Bureau of the Census: Employment Status of Persons 14 Years Old and Over (1940). Population Releases, Series P-8.

[13] Throughout this report it must be kept in mind that the age data relate to the married women.

This was due mainly to increases in proportions in business pursuits, for the proportion in the professional classes remained practically the same after age (of wife) 25.   In comparing the proportions in the several classes at ages 15–19 and 40–44, respectively, we find professional groups formed 2.4 and 7.3 per cent; business, 23.2 and 40.4; skilled, 56.6 and 45.3; and unskilled, 17.7 and 7.1.

Among the foreign whites the relation between age and occupational class was different from that observed for native whites.   There was some slight advance into the white-collar occupations up to age 35, but thereafter the proportions in the "white-collar" ranks decreased with advancing age while those in laboring jobs (especially unskilled) increased.   This situation probably does not signify actual downward shifts in occupational status after attainment of age 35 or 40.   Instead, it possibly reflects differences between the younger and older immigrants with respect to origins and educational background.

Among the colored families there was little difference by age in the occupational composition.   Throughout all ages over half were in the unskilled class and only 6–13 per cent were in professional or business groups.   This apparent inability to climb the occupational ladder probably reflects the circumstances of limited education and severe restrictions on employment opportunities.   There was a little increase in proportions in white-collar classes with advancing age, but the small amount of this increase emphasizes the reality of the under-privileged status of the Negro.

AGE DISTRIBUTION OF WIVES BY OCCUPATIONAL CLASS OF THE HEAD

The data have been arranged in Table 11 and Figure 5 to show the age distributions of the various occupational classes. Among the native whites there was the expected indication of youngest age constituency among unskilled laborers, next

youngest among the skilled workers, next among the business class, and oldest ages among the professional groups.

Exactly the opposite situation was observed for the foreign whites. As previously stated, there is probably involved

TABLE 11.—*Age distribution of wives of childbearing age in the Health Survey. Percentages shown by occupational class of the head, and by nativity and color of the wife*

Nativity, Color and Age of Wife	Total	Professional	Business	Skilled and Semiskilled	Unskilled
Native White					
Total 15–44..	100.0	99.8	100.0	100.1	100.0
15–19	2.4	.8	1.4	2.8	4.8
20–24	14.9	10.2	12.2	16.1	20.6
25–29	23.0	23.5	22.4	23.1	23.5
30–34	21.4	23.9	22.1	21.1	19.4
35–39	20.7	22.3	22.7	20.0	17.0
40–44	17.6	19.1	19.2	17.0	14.7
Foreign White					
Total 15–44	100.0	99.8	100.0	100.1	100.0
15–19	.2	.0	.1	.2	.2
20–24	3.9	5.0	4.0	3.9	3.2
25–29	12.5	17.1	13.3	12.5	10.2
30–34	20.6	23.4	22.4	20.2	18.2
35–39	29.3	27.6	29.5	29.5	29.1
40–44	33.5	26.7	30.7	33.8	39.1
Colored					
Total 15–44. ...	100.0	99.9	99.9	100.0	100.0
15–19	4.2	1.7	2.6	3.9	4.2
20–24	16.0	12.7	13.6	16.0	16.0
25–29	23.0	22.3	21.2	23.4	23.1
30–34	20.5	20.8	21.4	21.7	20.0
35–39	22.1	23.7	22.9	21.9	22.6
40–44	14.2	18.7	18.2	13.1	14.1

here the better educational training among young and recent immigrants than among the older and earlier ones. Whatever this situation may be, the point of chief importance is that within each occupational class there was a

marked concentration of foreign wives in the later ages of the childbearing span.

The relatively few colored wives of professional and business men were a little older than wives of laborers.
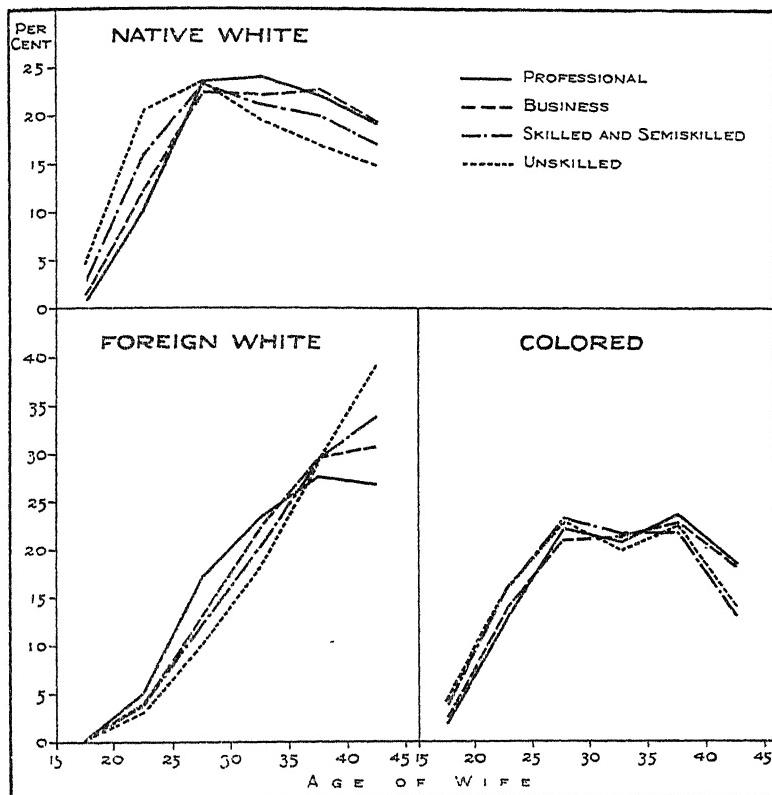
FIGURE 5.—*Age distribution of wives 15–44, by occupational class of the head; within groupings by nativity and color of the wife* Surveyed cities combined. *See* Table 11

Nevertheless, the outstanding characteristic was similarity in the age distribution of colored wives at different occupational levels.

In order to bring out more sharply the differences by

nativity and color in age distributions of wives of comparable occupational status, Figure 6 has been prepared. The contrast between native-white and foreign-white wives with
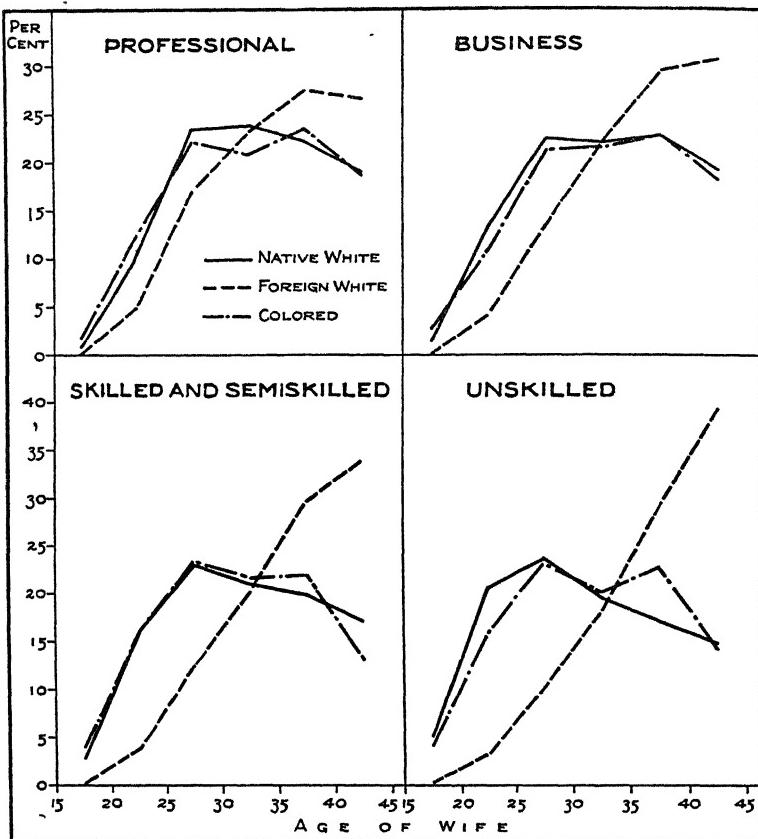
FIGURE 6.—*Age distribution of wives 15–44, by nativity and color; within groupings by occupational class of the head*
Surveyed cities combined.   *See* Table 11

respect to age distribution was smallest within professional groups and most conspicuous among unskilled laborers. The generally older ages of the foreign whites is due, of course, to the imposition of drastic immigration restrictions during

the 'twenties. The foreign population is now deprived of annual recruits from abroad into its younger ages. It is of much interest to see that out of almost 52,000 foreign-white married women 15–44 years of age, enumerated in the *Survey*, only 83 (less than two-tenths of 1 per cent) were 15–19 years of age.

The similarity of the age distributions of urban native-white and colored married women in the *Survey* is of interest for its indication of the "coming of age" of urban Negro populations. Such comparisons made ten to twenty years ago would have shown very different results, for the period from the World War to the onset of the depression in 1929 was one of Negro migration to cities, and studies have shown that these migrants were largely young adults. By 1935, however, the abnormal character of the age-curve appears to have largely disappeared.

In general, the variations in age by nativity, color, and occupational class pointedly show that for comparing birth rates it is highly necessary either to standardize for age or to show the rates in age-specific form. The unstandardized annual birth rates of foreign-white wives now tend to be much lower than those for native whites[14] because relatively small proportions of the foreign born are in the young age groups where births are most frequent. (*See* p. 30, footnote 13.) In the following pages the birth rates by nativity, color, and occupational class (and in later chapters by education and income) are presented in age-specific form or in the form of rates for wives 15–44 standardized for age.[15]

Standardized Rates for the Total Survey

(a) *Native White.* The standardized fertility rates among all married women of childbearing age in the combined urban

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[14] Quite the opposite and equally invalid comparisons would result from the use of unstandardized rates by nativity based upon total number of children ever born.

[15] For method of standardization, *see* p. 29, footnote 12.

areas of the *Survey* are given by occupational class of the head and by nativity and color of the wife in Table 12 and Figure 7. To devote attention first to the native whites, it will be noted that the average rate for the professional class surpassed that for the business class. Otherwise, the picture was one of inverse relation of occupational status to fertility.

TABLE 12.—*Fertility rates in 1935 among wives of childbearing age in the Health Survey; by occupational class of the head, and by nativity and color of the wife. Data shown in relation to occupational composition of the samples*

Rates standardized for age

Occupational Class of the Head	Live Births per 1,000 Wives			Per Cent Distribution by Occupation of Head			Number of Wives		
	White			White			White		
	Native	Foreign	Colored	Native	Foreign	Colored	Native	Foreign	Colored
Total	96	111	86	100.0	100.1	100.1	284,246	51,901	39,511
Professional	94	86	79	6.7	3.3	2.4	18,494	1,686	897
Business ..	86	109	81	37.4	26.6	7.9	102,754	13,557	2,983
Skilled and Semi-skilled	100	111	85	47.4	53.4	37.0	130,306	27,248	13,946
Unskilled	115	122	86	8.5	16.8	52.8	23,376	8,561	19,906
Other and Unknown..							9,316	849	1,779

The failure of the rate for the professional class to fall below that for the business class is of interest. It has its counterpart in the later analysis by income (Chapter V) where the lowering of marital fertility rates with increasing income did not extend into the upper-income brackets. Also, in the analysis by education, the average rate for wives of college attainment was very little below that for wives of high school attainment. The question arises, therefore, as to the reality and significance of what appears to be a new development in urban differential fertility. Sydenstricker's

and Notestein's well-known analysis of Census data collected in 1910 indicated that thirty years ago there was among urban native-white married women a sharp and consistent inverse relation between fertility rates of wives and occupational class of husbands.[16] In those data the rate for the professional class fell definitely below that for the business class, albeit the difference was not so great as that between the business and skilled or between the skilled and the un-
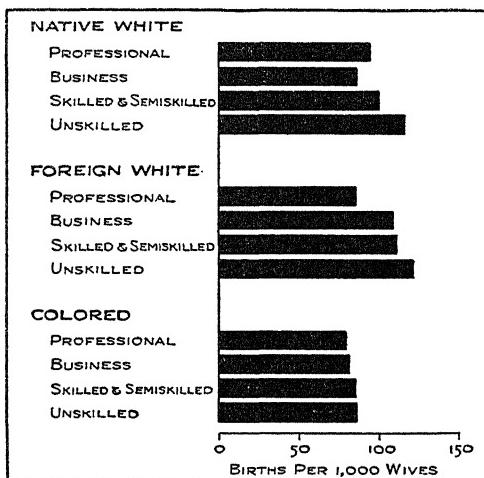
FIGURE 7.—*Occupational class of the head in relation to fertility rates in 1935 among wives 15–44 years of age, by nativity and color of the wife*
Rates standardized for age and surveyed cities combined. *See* Table 12

skilled groups. Equally satisfactory data for an early period in this country are not available for other nativity-color groups or for socio-economic characteristics other than occupational class.

Before emphasizing too much the apparent reversal of the professional and business classes with respect to marital

[16] The study was based upon unpublished data for a sample of 69,620 native-white married women under 45 years of age, living in selected urban and rural areas of Northern and Western states. *See* Sydenstricker and Notestein, 1930.

fertility, certain qualifications should be pointed out. As will be noted later, the "reversal" was not found in all area-size groups of cities in the *Survey*. Furthermore, although the coding system used in the assignment of specific occupations to broad classes was essentially the same for the 1910 study as for the *Survey*, it was not precisely the same.[17] Quite apart from the coding systems, one may ask whether the professional and business classes of today are comparable with those of a generation ago. Is it possible that the "business" class of today, rather than the professional class, belongs at the top in so far as socio-economic status is concerned? Changes of this nature may have taken place during the past generation, but the fact remains that in the present sample the native-white wives of professional men, as a group, reported higher educational and family-income status than did those of business men (Chapter VI, Tables 34 and 35).

The fact that the *Survey* data pertained to births during a single year, 1935, presents the possibility that the lower fertility rates for the business class than for the professional class was only a temporary condition associated with the depression.[18] Strong suggestion that the new pattern is not simply an abnormal accompaniment of the depression is afforded by similar results from another recent investigation for this country, based upon 1930 Census data for the East North Central states and relating to average number of resident children *under 10 years of age* among native-white

[17] In their study of the 1910 data Sydenstricker and Notestein coded specific occupations according to the "Census Index to Occupations" for 1920, and assigned specific occupations to broad classes largely on the basis of an early system developed by Edwards (Edwards, 1917). *See* Sydenstricker and Notestein, 1930, p. 18. As previously stated, Edwards' occupational class code for the 1930 Census was used in the *Survey*.

[18] It should also be pointed out, however, that if the "reversal" is real but of fairly recent origin, it may be concealed in any current data concerning total number of children ever born because this type of rate is influenced by fertility levels of the past extending back 25–30 years for some of the women 40–44 years of age.

urban marriages of *5–9 years' duration*.[19] Such fertility
indices were found to be higher for urban native-white
couples in homes valued at $10,000 and over than in homes
valued at $5,000 to $10,000.

It seems to the writer that one chief limitation of the
Survey index of fertility is that it is not sufficiently com-
parable with that used in the 1910 study to warrant a defini-
tive description of the trends in the fertility levels of each
occupational class. The index used in the 1910 data re-
lated to total number of children ever born, whereas the
Survey related to births during one year. We are thus
unable to speak with any degree of certainty on the question
of whether or not there has been any general narrowing of
class differences in fertility.[20] Fortunately, the 1940 Census
contained a question on total number of children ever born
from a 5 per cent random sample of the population. With
help from the Work Projects Administration transcriptions
from the original schedules of the 1910 Census have also
been made to permit a study of trends in fertility by oc-
cupational class from 1910 to 1940. The reworking of the
1910 materials will afford data more comprehensive, and
more comparable with those of the 1940 Census, than is
provided in the restricted sample already analyzed by
Sydenstricker and Notestein. It is hoped that the comple-
tion of this study will not be delayed too long as a result of
the war emergency.

In the meantime, the writer is inclined to accept as real

[19] Notestein, 1938.

[20] The chief difficulty is that the studies based upon 1910 data relate to total
number of children *ever born*, whereas the *Survey* data relate to births during one
year. It would be possible to compare the relative spread of the rates by occupa-
tional class at the two periods, but this procedure would probably give an exag-
gerated picture of the reduction in such relative spread. As previously described,
the presence of rural migrant families in urban centers would tend to enhance the
levels of fertility of lower occupational groups when measured by total number of
children ever born to a greater extent than when measured by birth rates during
one year (*see* p. 13).

the indications from the *Survey* and from the study of 1930 Census data,[21] of some change in pattern of class differences in the fertility of urban native-white married women in this country. The writer's tentative interpretation is that class differences in the fertility of urban native-white married couples are tending to become less important. This view is supported by the results of Innes' study of trends in class birth rates in England and Wales from 1921 to 1931, which indicated the emergence of exceptions to the inverse relation.[22] This study was free from some of the limitations of the *Survey*. For both the 1921 and 1931 data comparable indices of fertility and of occupational class were used, and the fertility index related to total number of children ever born by age of husband. Innes' study is therefore distinctive in that it affords the definitive description of trends in the fertility rates for specific occupational classes thus far lacking in studies for this country. His study rather forcibly indicates a lessening in the importance of class differences in fertility due to the more rapid decline in the birth rates of the "lower" than in the "upper" occupational classes during the 1921–1931 decade. Of particular interest was the indication that the reversal in the order of the birth rates within the top ranks of the occupational hierarchy occurred as a result of differences in the rate of decrease of the birth rate. No increase of the birth rate was found for any class.

It should be emphasized that all data indicative of changes of the type described in the pattern of differential fertility have been restricted to married couples. As brought out in Chapter VII, the *Survey* data themselves indicate that the inverse relation persists in prominent form when general fertility rates for women of childbearing age and reproduction rates are considered. This is due to the fact that there is a strong inverse association between socio-economic status

[21] Notestein, 1938, pp. 186–190.
[22] Innes, 1941.

and proportions married, especially when younger ages of the childbearing span are considered.

Finally, in the case of the reversal in the marital fertility rates, the importance of the professional and business classes should be kept in mind. As indicated in Table 12, wives of professional men constituted only 6.7 per cent of the total group of native-white married women in the sample. From a population point of view, the magnitude of the birth rate for the professional class is not of primary consequence. The more important aspect of any reversal of the rate for these classes is the indication that very low, if not the lowest, marital fertility rates among urban native whites are now found among the large group of non-professional white-collar workers. This group constituted over one-third of the native whites in the present sample.[23]

(b) *Foreign White*. Among foreign-white wives in the combined areas of the *Survey* the straight inverse relation between fertility and occupational status of the head was found. As will be noted later, however, this situation was not consistently manifested either at all ages of the childbearing span or in all areas of the *Survey*. A noticeable characteristic of the data is the lack of substantial difference between the rates for the business and skilled classes. Although this was not found invariably in subdivisions of the present data, similar situations have been commented upon in other studies.[24]

As previously stated, the foreign-white wives were more concentrated in the two laboring classes than were the native whites. The low birth rate for foreign-white wives of professional men applied to only about 3 per cent of the total

[23] Although the *Survey* data afford no direct evidence on the point, it seems likely that the reversal arose from sharper declines in birth rates for the business than for the professional class, rather than from any increase in the birth rates for the professional class. This type of explanation definitely applied in the data for England and Wales. *See* Innes, 1941, pp. 73–75.

[24] Kiser, 1937, p. 71.

foreign-white group. It should also be remembered that whatever the status of differential fertility among foreign whites and whatever the internal distribution of the sample may be along occupational lines, the total number of foreign-white wives of childbearing age in this country is rapidly diminishing. Hence, the problem of differential fertility among foreign whites is no longer one of primary importance.

(c) *Colored.* The combined data for urban colored wives in the *Survey* indicated little differentiation of fertility rates by occupational class. The slight variations that did exist were in the direction of the inverse association. But none of these differences, not even that between the professional and unskilled classes, was found to be statistically significant to the extent of being twice the standard error of the difference. Among the whites in the combined sample, the only difference in fertility rates by occupational class that failed to be significant by this criterion was the slight one between the business and skilled classes of the foreign-born wives.[25] In considering the colored wives it is also important to keep in mind that nine-tenths of them fell into the two laboring

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[25] The results are given below. Italicized figures are used for differences larger than 2 σ.[a]

Classes Compared	Difference ± σ Difference of Birth Rates		
	Native White	Foreign White	Colored
Professional–Business	*8 ± 2.3	23 ± 7.9	2 ± 10.4
Professional–Skilled...	6 ± 2.4	25 ± 7.9	6 ± 9.6
Professional–Unskilled....................	21 ± 3.1	36 ± 8.5	7 ± 9.6
Business–Skilled	14 ± 1.2	2 ± 3.3	4 ± 5.6
Business–Unskilled....	29 ± 2.1	13 ± 4.4	5 ± 5.5
Skilled–Unskilled	15 ± 2.2	11 ± 4.0	1 ± 3.1

[a] In general, italicized figures in this and in later tables of a similar kind may be regarded as denoting significant differences. It should be emphasized, however, that in a series of sigmas there may be specific instances where apparent significance or insignificance is the result of chance or faulty sampling. The reader should be cautioned against assuming that any particular difference is significant when there is no consistency of results or no logical reason to back up the standard error.

* Rate for the professional class was higher than that for the business class. In all other cases the opposite type of relation was observed. *See* Table 12.

classes and these two classes were characterized by virtually similar fertility rates.

TABLE 13.—*Age-specific fertility rates in 1935 among wives in the Health Survey; by occupational class of the head, and by nativity and color of the wife*

Nativity, Color and Age of Wife	Live Births per 1,000 Wives				
	All Occupations	Professional	Business	Skilled and Semiskilled	Unskilled
Native White					
Total 15–44[1]	96	94	86	100	115
15–19	249	221	198	262	288
20–24	196	161	174	208	224
25–29	130	142	124	132	147
30–34	81	89	76	81	100
35–39	40	44	32	45	55
40–44	15	11	11	17	25
Foreign White					
Total 15–44[1]	111	86	109	111	122
15–19	229*	—	—	220*	—
20–24	218	153*	232	224	220
25–29	158	142	159	154	174
30–34	96	86	88	97	111
35–39	50	30	43	52	60
40–44	19	11	14	18	27
Colored					
Total 15–44[1]	86	79	81	85	86
15–19	301	—	392*	315	275
20–24	175	140	150	165	184
25–29	94	110	96	93	91
30–34	69	70	52	64	74
35–39	42	28	37	45	41
40–44	17	6	13	22	16

[1] Rates shown for totals are standardized for age.

*Age-specific rate based on 25-99 cases. Age-specific rates based on fewer than 25 cases are not shown. *See* Appendix Table 4 for numerical distribution of wives.

AGE-SPECIFIC RATES FOR THE TOTAL SURVEY

(a) *Native White.* In Table 13 and Figure 8 age-specific birth rates per 1,000 wives are shown by occupational class

of the head for each of the three nativity-color groups in the total *Survey*. Concerning the native whites, the outstanding indications may be stated as follows: (1) at all
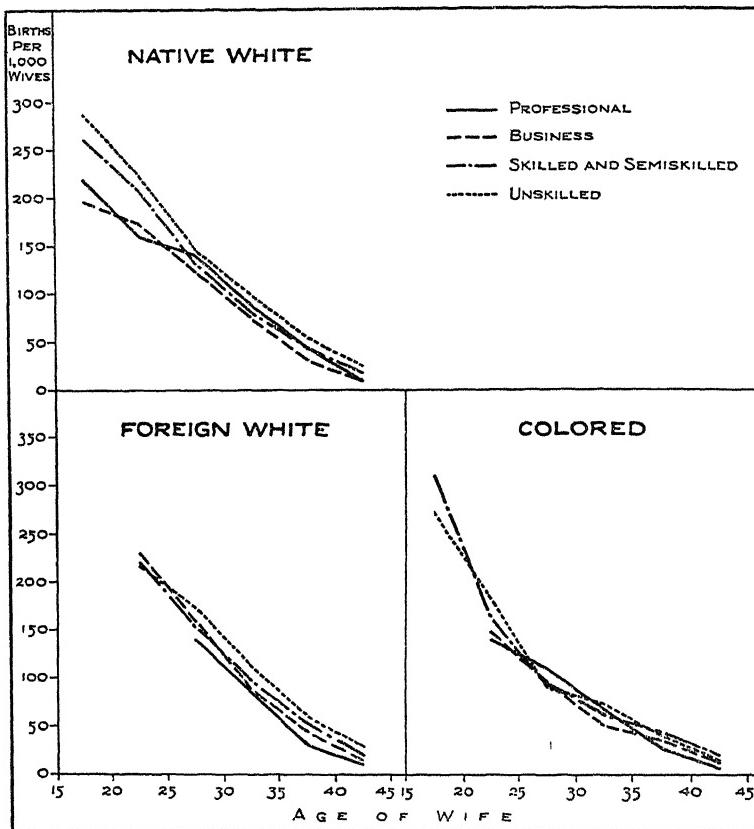
FIGURE 8.—*Age-specific fertility rates in 1935, by occupational class of the head and by nativity and color of the wife*
Surveyed cities combined. *See* Table 13

ages the birth rates among wives of unskilled laborers exceeded those for married women of corresponding ages in the remaining occupational groups; (2) only among married

women under 25 years of age was there a conspicuous gap between birth rates of laborers and those for the white-collar classes; (3) only at ages 20–24 did the rate for wives of professional men fall below that for wives of business men; in other age groups (up to age 40) the wives of business men had the distinction of lowest average birth rates; and (4) at ages 25–34 the rate for the professional class was decidedly higher than that for the skilled workers. The last-mentioned situation may be due in part to a larger proportion of first births (from later ages at marriage and from postponement of initial births) among the professional than among the skilled-worker groups at these ages. Some presumptive evidence on this question is afforded by the conspicuously high level of fertility of the laboring classes at youngest ages.

(b) *Foreign White*. Among the foreign-white married women, the age-specific birth rates were consistently lowest for wives of professional men and highest for wives of unskilled laborers. The virtual equality of the rates for the business and skilled classes held true at all ages of the childbearing span. Up to age 30 the rates for the business class slightly surpassed those for the skilled class, but at older ages the small differences were in the opposite direction.

(c) *Colored*. The age-specific rates confirm the previous statement concerning the absence of marked variations by occupational class in the fertility of urban colored wives. Furthermore, since the two laboring classes constituted 90 per cent of the colored population considered, the slight fertility differences by occupational class that did exist are of only minor demographic significance.

(d) *Nativity-Color Differences*. Figure 9 brings out the differences by color and nativity in fertility rates of wives of the same broad occupational class. Within each occupational group, the age-specific birth rates for wives 20–34 years of age were consistently lowest for the colored group. This type of difference was most pronounced in the two

laboring classes. The characteristically high birth rate for colored wives 15–19 years of age was manifested in the two laboring classes. The sample contained two few colored
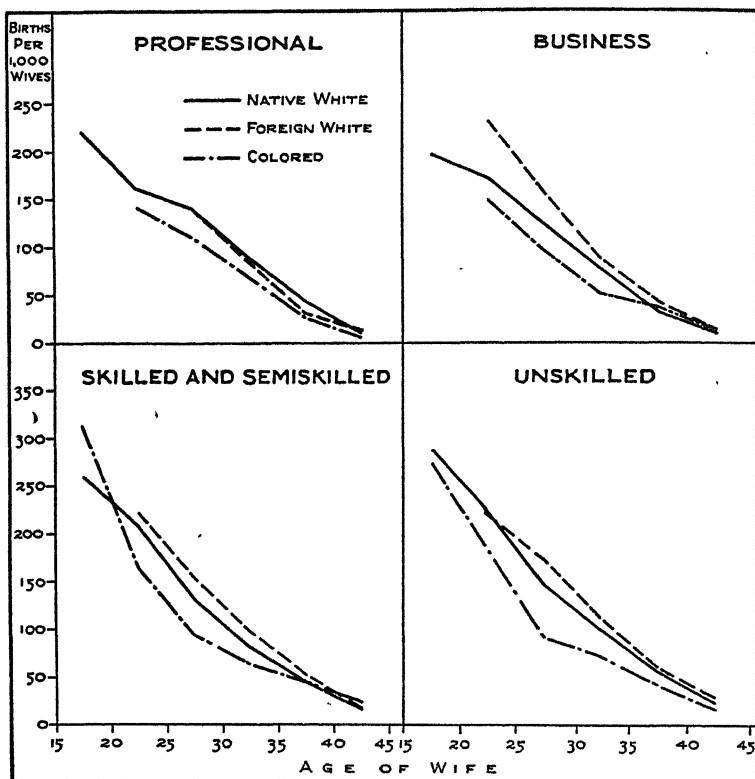
FIGURE 9.—*Comparisons by nativity and color of age-specific fertility rates for wives of similar class with respect to occupation of the head* Surveyed cities combined. *See* Table 13

wives of this age in the professional and business classes to warrant computation of birth rates.

With regard to comparisons of whites by nativity, the most pronounced excess of birth rates of foreign-white wives over native whites occurred within the business class and at

ages under 30.   Within the professional class the age-specific rates for the foreign-white wives were consistently as low as, or lower than, those for the native whites throughout the childbearing span.   Also, the differences by nativity were of small consequence within the two laboring classes.

Standardized Rates by Area and Size of City

(a) *Native White*.   The classifications of the data for native-white wives by area and size of community (Table 14, Figure 10) substantiate the generalizations made from the combined sample.   In most instances, the rates for wives of business men were as low as, or lower than, those for wives of professional men.   Actually, in most cases there was little or no statistical significance to the difference between the fertility rates for those two classes.   It seems fairly definite, however, that the native-white urban wives of professional men can no longer be characterized as being generally less fertile than comparable groups of women married to business men.   Aside from this situation, the more frequent picture was that of inverse association between occupational status and birth rates.   Even in this respect, however, the exceptions are noteworthy.   In the Pacific Coast samples, for instance, low levels of fertility were found for all classes, with the result that occupational differences in fertility appeared to be of minor importance.   Also, in certain groups of cities under 25,000 population in other areas, the principle of inverse relation between fertility and occupational status was manifested in only a crude manner.

In Table 15 and Figure 11 standardized birth rates among native-white wives are given by occupational class for each of the ten surveyed cities having populations of 500,000 or more in 1930.   Due to inadequacies of the data, corresponding analyses are not presented for the foreign-white and colored wives.   Even for the native whites, the observed

TABLE 14.—*Fertility rates in 1935 among native-white wives of childbearing age in the Health Survey; by occupational class of the head, and by area and size of city*

Rates standardized for age

Size of City and Occupation of Head	Live Births per 1,000 Wives					Number of Wives				
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over										
Total						53,922	45,595			9,012
Professional . .	93	89			66	3,819	2,654			1,045
Business	98	84			72	19,421	15,107			3,803
Skilled and Semi-skilled	119	95			72	24,381	23,444			3,320
Unskilled	127	100			82	4,710	3,272			568
Other and Unknown						1,591	1,118			276
100,000–500,000										
Total						16,706	26,573	28,855	3,735	14,560
Professional .	98	95	88	114*	87	1,005	1,686	1,809	270	1,088
Business . . .	100	96	65	119	76	5,477	9,283	13,045	1,525	6,184
Skilled and Semi-skilled .	111	106	76	133	90	8,500	13,197	11,671	1,519	5,861
Unskilled . .	135	123	86	163*	86	1,218	1,700	1,345	283	1,050
Other and Unknown						506	707	985	138	377
25,000–100,000										
Total..						7,810	17,712	17,984		3,420
Professional . . .	106	89	83		122*	568	803	1,113		284
Business . . .	101	85	81		66	2,092	5,839	8,099		1,283
Skilled and Semi-skilled . .	121	99	87		82	4,070	8,934	6,755		1,427
Unskilled	145	117	103		47*	812	1,532	1,403		237
Other and Unknown .. .						268	604	614		189
Under 25,000										
Total						9,781	9,813	8,332	1,432	9,004
Professional....	108	120	88	—	101	609	633	408	81	619
Business.... .	102	93	80	119*	78	3,020	3,064	2,515	259	2,738
Skilled and Semi-skilled . . .	105	124	95	136	84	4,263	4,098	4,265	439	4,162
Unskilled.	133	122	143	128	81	1,442	1,422	630	600	1,152
Other and Unknown.........						447	596	514	53	333
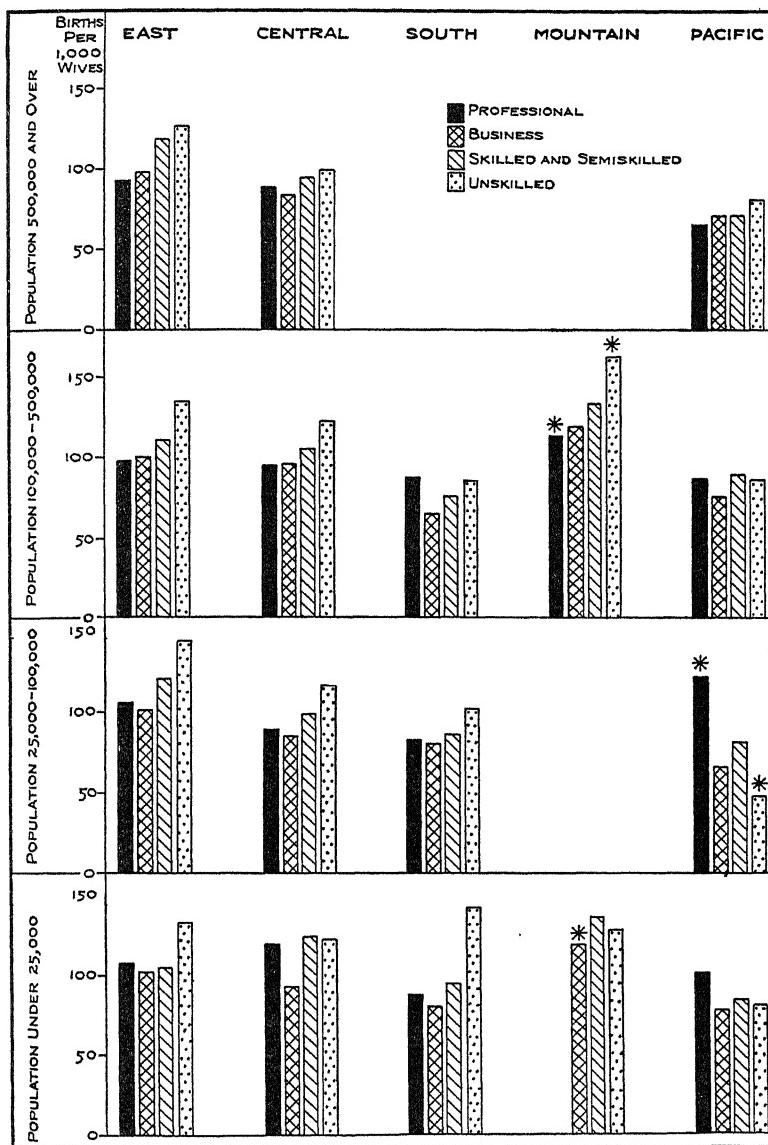
FIGURE 10.—*Occupational class of the head in relation to fertility rates in 1935 among native-white wives 15–44 years of age, by area and size of surveyed cities*

Rates standardized for age.   *See* Table 14

occupational differentials in fertility are doubtless not always representative for individual cities, since the samples for the professional and unskilled classes tended to be relatively small. It is of interest to note, however, that the

TABLE 15.—*Fertility rates in 1935 among native-white wives of childbearing age in specified cities of the Health Survey; by occupational class of the head*

Rates standardized for age

City	Live Births per 1,000 Wives			
	Professional	Business	Skilled and Semiskilled	Unskilled
Boston	103	112	136	143
Buffalo.	108	98	126	134
New York......	82	95	116	110
Philadelphia..	91	89	104	127
Pittsburgh.....................	95	100	121	122
Chicago	99	87	97	105
Cleveland	84	74	94	100
Detroit	103	95	102	87
St. Louis.	64	80	84	102
Los Angeles	66	72	72	82
	Number of Wives			
Boston........................	598	2,942	3,702	813
Buffalo...........	583	3,227	5,372	771
New York	1,338	6,598	6,105	1,196
Philadelphia...........	742	3,784	5,724	742
Pittsburgh.........	558	2,870	3,478	1,188
Chicago......................	1,035	5,825	6,790	1,157
Cleveland....	595	3,288	6,508	975
Detroit........................	566	2,689	5,182	452
St. Louis.....	458	3,305	4,964	688
Los Angeles.	1,045	3,803	3,320	568

relative variations in marital fertility rates by occupational class were greatest in Boston, St. Louis, and Philadelphia, and least in Detroit, Los Angeles, and Chicago. With respect to the position of the rates for professional and business classes, the rate for the professional class was higher in

five cities and lower in five. For Detroit the highest rate observed was that for the professional class and the lowest rate was that for the unskilled laborers. In view of the numbers involved in these extreme classes in Detroit, however, little reliability can be attached to this instance of partially direct association between birth rates and occupational status.[26] In all cities except Los Angeles the rate for the business class was lower than that for the skilled class, and these two occupational groups were generally represented by substantial numbers of native-white wives. In all except two of the cities (New York and Detroit), the rates for skilled workers were lower than those for unskilled laborers.

(b) *Foreign White.* Due to the small number of foreign-white wives under 25 years of age in the *Survey*, it was decided to restrict to women 25–44 years of age the subdivisions by socio-economic status within area-size groups, Table 16. The rates plotted in Figure 12, therefore, are not comparable with those for native-white and colored wives in Figures 10 and 13. Figure 12 is also restricted to Eastern, Central, and Pacific cities of 100,000 population and over, the most important centers of foreign-white residence. Only in the cities of largest size in Eastern areas was the straight inverse association between birth rates and occupational status manifested. On the basis of numbers of

[26] As indicated below, in the Detroit sample of native-white wives the difference between standardized birth rates for no two occupational classes was significant to to the extent of being twice the standard error of the difference.

Classes Compared	Difference ± σ Difference
Professional–Business..	8 ± 13.7
Professional–Skilled..	1 ± 13.5
Professional–Unskilled.........	16 ± 18.9
Business–Skilled..........	*7 ± 7.2
Business–Unskilled....	8 ± 14.8
Skilled–Unskilled	15 ± 14.8

* Rate for the business class was lower than that for the skilled class. In all other cases the opposite type of relation was observed. *See* Table 15.

women involved, it is apparent that the Eastern cities of
largest size dominated the results for foreign whites in the
total *Survey*, previously shown in Figure 7. In Central
cities of 500,000 population or more, all classes except the
professional were represented by substantial numbers, and
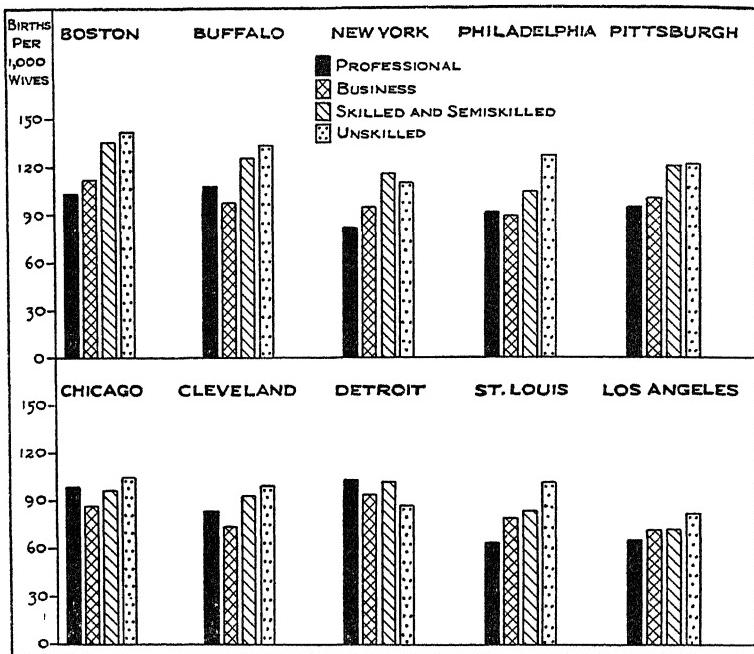
FIGURE 11.—*Occupational class of the head in relation to fertility rates in 1935
among native-white wives 15–44 years of age enumerated in specified cities
of the "Survey"*
Rates standardized for age. *See* Table 15

yet little in the way of class variations was observed in the
fertility of the business, skilled, and unskilled classes. In
other groups of cities the inadequacy of the samples for
extreme classes prohibits broad generalization. The data
for the intermediate classes, however, do suggest that fertility
rates among foreign-white wives of business men were as
high as those of skilled workers.

TABLE 16.—*Fertility rates in 1935 among foreign-white wives 25–44 years of age in the Health Survey; by occupational class of the head, and by area and size of city*

Rates standardized for age

Size of City and Occupation of Head	Live Births per 1,000 Wives					Number of Wives				
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over										
Total						20,783	13,095			1,120
Professional	66	89			—	701	350			87
Business	80	74			58	5,691	2,923			440
Skilled and Semiskilled	93	71			73	10,634	7,498			440
Unskilled	115	77			42*	3,474	2,201			115
Other and Unknown						283	123			38
100,000–500,000										
Total						5,171	2,139	573	325	1,803
Professional	40*	—	—	—	—	100	79	37	10	80
Business	81	97	60	117*	84	1,214	501	348	104	606
Skilled and Semiskilled	79	74	106*	156*	57	2,994	1,290	143	161	785
Unskilled	106	61*	—	—	37*	792	233	30	40	284
Other and Unknown						71	36	15	10	48
25,000–100,000										
Total						1,304	663	152		131
Professional	—	—	—		—	41	33	9		7
Business	74*	84*	—		—	251	174	96		52
Skilled and Semiskilled	89	122	—		—	729	365	38		54
Unskilled	70*	—	—		—	257	78	7		12
Other and Unknown						26	13	2		6
Under 25,000										
Total						1,338	466	52	87	596
Professional	—	—	—	—	—	30	13	3	1	20
Business	77*	—	—	—	59*	286	96	29	15	163
Skilled and Semiskilled	68	82*	—	—	55*	608	128	9	30	251
Unskilled	136	65*	—	—	31*	348	216	7	39	138
Other and Unknown						66	13	4	2	24

* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

(c) *Colored.* The small number of colored wives outside of laboring-class families prevents an adequate analysis of

fertility differentials by occupational status *and* by area and size of city. Within their limitations, however, the available data (Table 17, Figure 13) tend to confirm the lack of important occupational differentials in the fertility of urban colored marriages.

On an area-size basis, the largest group of colored wives in the sample was that enumerated in Southern cities of
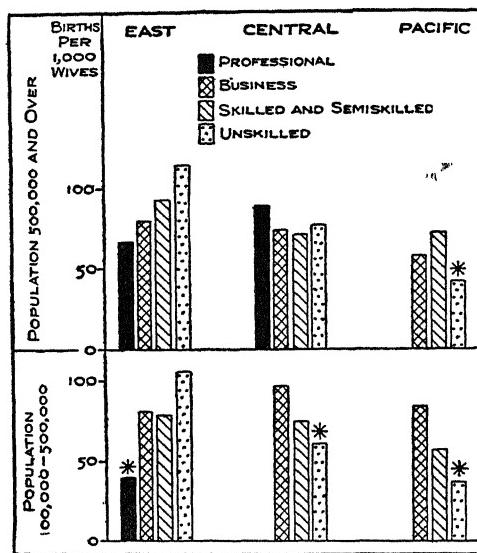
FIGURE 12.—*Occupational class of the head in relation to fertility rates in 1935 among foreign-white wives 25–44 years of age, in selected groups of surveyed cities*

Rates standardized for age. *See* Table 16.
* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

100,000–500,000 population. Within this group the rate for the wives of unskilled laborers was highest, but there was little further variation. Fairly large samples were also enumerated in Eastern and Central cities of largest size. Within these areas the rates for the unskilled classes fell a little below those for the skilled classes, but otherwise, the principle of inverse association was manifest.

TABLE 17.—*Fertility rates in 1935 among colored wives of childbearing age in the Health Survey; by occupational class of the head, and by area and size of city*

Rates standardized for age

Size of City and Occupation of Head	Live Births per 1,000 Wives				Number of Wives				
	East	Central	South	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over									
Total					5,800	6,398			1,846
Professional	65*	77*		—	150	141			59
Business	86	82		114	562	606			322
Skilled and Semiskilled...	97	96		155	1,919	2,396			607
Unskilled	90	92		160	2,984	3,094			665
Other and Unknown...					185	161			193
100,000–500,000									
Total					1,339	1,489	12,337	33	333
Professional	—	—	72*	—	36	26	236	—	14
Business	—	—	71	—	61	69	758	3	76
Skilled and Semiskilled...	101	77	71	—	506	464	4,556	6	76
Unskilled	104	87	79	63*	668	871	6,398	20	149
Other and Unknown.....					68	59	389	4	18
25,000–100,000									
Total					73	593	5,268		7
Professional	—	—	102*	—	—	21	120		—
Business	—	—	48	—	4	23	314		3
Skilled and Semiskilled...	—	133*	57	—	27	195	1,746		—
Unskilled	—	110	72	—	38	326	2,756		2
Other and Unknown....					4	28	332		2
Under 25,000									
Total					416	142	3,201	35	201
Professional	—	—	—	—	9	4	80	—	1
Business	—	—	83*	—	13	6	138	2	23
Skilled and Semiskilled...	87*	—	91	—	175	37	1,176	3	57
Unskilled	98*	—	78	150*	176	80	1,538	28	113
Other and Unknown..					43	15	269	2	7

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

On the whole, the relatively few "white-collar" workers were characterized by somewhat lower fertility rates than
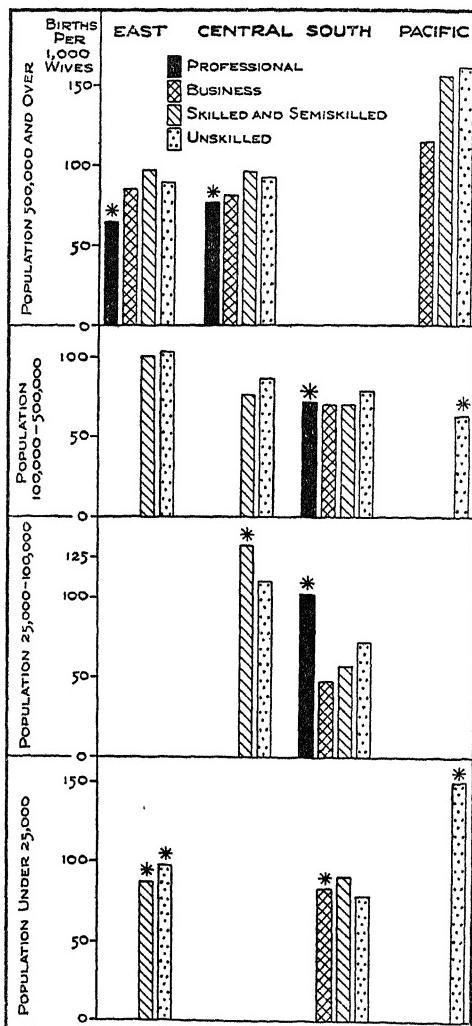
FIGURE 13.—*Occupational class of the head in relation to fertility rates in 1935 among colored wives 15–44 years of age, by area and size of surveyed cities*
Rates standardized for age. *See* Table 17.
* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

were the laboring classes in urban areas.   On the other hand, there appeared to be little difference between the rates for

the skilled and unskilled classes, the two predominant groups. In general, it would appear that the facts of outstanding importance are the relatively low fertility[27] of Negro wives under urban conditions, the heavy concentration in the laboring classes, and the lack of consistently manifested skilled-unskilled differences in birth rates.

SUMMARY

Internal distributions of the three nativity-color groups indicated that the proportion of professional and business families was highest among native whites and lowest among the colored.

A fairly marked and consistent positive association between age of wife and occupational status of the head was observed among native-white wives of childbearing age. Among foreign-white wives the occupational composition did not vary much with age of wife throughout ages 20–34. At later ages there was a rather marked inverse association between age of foreign-white wives and occupational status of the head. Among colored wives there was a slight increase with advancing age in the minority reporting white-collar status.

The age distributions by occupational class also point up the differences by nativity and color in the age-occupational relationships. Among the native-white wives in the sample, those from professional families were oldest and those from unskilled families were youngest. The opposite situation held true among foreign whites, but within each occupational class the foreign-white wives were much older, on the average, than were native-white or colored wives. Among the colored wives there was no substantial difference in age distributions for the several occupational classes.

With respect to variations in fertility, the point of chief

[27] As previously stated, the high birth rates shown for colored women on the Pacific Coast are due to the influence of Mexican and yellow races (see p. 28–29).

interest revealed by the data for the native-white wives was the apparent emergence of an exception to the traditional inverse association between occupational status and fertility. The distinction of lowest average rate of marital fertility appears to have passed from the professional to the business class. Otherwise, the inverse relation was manifested. Described by age, the chief differentials in fertility along occupational lines were found among wives under 25. The analysis by area and size of community appeared to confirm the trend toward diminishing variations by occupational class in the fertility of urban native-white married women. This trend appears to have progressed furthest in the cities of the Pacific Coast. All occupational classes of urban native-white wives in that area were characterized by low fertility rates.

As to the foreign-white wives, the combined data yielded an average picture of inverse relation between marital fertility and occupational status. Wide variations in the character of this relationship, however, were found in the subdivisions of the sample by area and size of community. Whatever the real situation may be, foreign-born women are rapidly passing out of the childbearing span, so their importance from a population point of view is diminishing.

For the combined sample of colored wives of childbearing age, the analysis indicated a faintly discernible inverse relation of birth rates with occupational class of the head. Ninety per cent of the group fell into the two laboring classes, skilled and unskilled, however; and there appeared to be little in the way of consistent or marked differences between the two predominant classes with respect to fertility.

MARITAL FERTILITY RATES IN RELATION TO EDUCATIONAL ATTAINMENT OF THE WIFE

THE development of public education in this country was a natural, if somewhat belated, sequel to our early concepts of democracy. The philosophy of public education rested not only on the ideal of equality of opportunity but doubtless also on the concern for improvements in qualities of citizenship within the democracy itself. There was and still is the belief that the benefits of education are cumulative from one generation to the next, despite the necessity of each individual's beginning anew the process of learning.

In some quarters, students have expressed the belief that the negative association between reproduction and cultural-intellectual level tends to nullify the aims of public education.[1] The theory runs that the generation-to-generation benefits of formal education tend to be restricted in a society where the births are continuously contributed in disproportionate part by families of meager educational status.

From the above point of view, knowledge of the actual variations in fertility by educational attainment is particularly valuable. In addition to data from the Health Survey there should soon be information based upon the more comprehensive returns from the 1940 Census. In the past, how-

[1] Lorimer and Osborn, 1934, pp. 37, 179–200, 344–348.

See also: Edwards, N., 1939, pp. 121–136.

National Resources Committee: THE PROBLEMS OF A CHANGING POPULATION, 1938, pp. 144–146, 201–210.

ever, the studies of this question have been of restricted value. For some decades prior to 1940 the Census collected no data on educational attainment of the population other than those relating to literacy, so they permitted merely the correlation of birth rates in given areas with percentages illiterate.[2] Before the Health Survey was made, studies based upon unofficial data for this country were mainly small and localized field investigations[3] and those relating to special groups such as graduates from specific colleges.[4]

Provisions were made in the Health Survey for recording the formal educational attainment of each person enumerated. From the 375,658 married women 15–44 years of age, the information was secured for all except 615, or less than two-tenths of 1 per cent. The entries were in the form of highest educational status *reached*, not necessarily *completed*. The specific grammar-school grade attained was recorded if the individual never entered high school. However, the status was simply checked as "Entered High School" if this amount of schooling but no college training was reported. Likewise, no data were collected to permit subdivision of individuals reporting college attendance. In a previous report based upon returns for five surveyed cities, marital fertility rates were presented according to educational status of the head of the household as well as that of the wife.[5] Since the two types of classification yielded essentially similar patterns of variation in fertility, the final and complete tabulations were made simply on the basis of the wife's education. Before presenting the data on birth rates it may

[2] Winston, 1930.

For Canadian data concerning birth rates in relation to literacy, *see*: Canada. Dominion Bureau of Statistics: *Sixth Census of Canada*, 1921, POPULATION, III, pp. 94–102.

[3] Notestein and Kiser, 1935.

See also: National Resources Committee: THE PROBLEMS OF A CHANGING POPULATION, 1938, pp. 144–146.

[4] For a list of these studies *see*: Lorimer and Osborn, 1934, pp. 320–325.

[5] Kiser (January) 1938, pp. 51–56.

be of interest to consider briefly the educational composition of the sample in relation to nativity, color, and age.

EDUCATIONAL COMPOSITION OF THE SAMPLE

From Table 18 and Figure 14 it is seen that about two-thirds of all the surveyed native-white wives 15–44 years of age reported the attainment of at least high school status. (For numerical distribution, *see* Appendix Table 6.) This was true for one-fourth of the foreign-white wives and one-third of the colored married women of childbearing age. Approximately 12 per cent of the native-white wives, 3 per cent of the foreign-white wives, and 4 per cent of the colored wives reported college attendance. At the other extreme, only 6 per cent of the native-white wives reported less than 7th grade schooling as compared with 35 per cent of the foreign-white and 40 per cent of the colored wives.

The relatively low educational attainment of the foreign whites in the total 15–44 age group, however, was in large part a function of age. Among all nativity-color groups, but especially among the foreign whites, the proportions of wives reporting entrance into high school declined sharply with increasing age of women. Since the foreign whites were heavily concentrated in the older age groups, the average educational attainment of the total group was quite low. When the summary distributions were standardized for age (p. 86), the proportions of wives of high school and college status were about the same for foreign whites as for colored, and the proportion in the "Under 7th Grade" group was much lower for the foreign whites than for the colored.

The inverse association between age of wife and amount of formal education is of interest in itself. This type of relationship was not completely manifested in so far as the college group was concerned, due to the late age at marriage of college women. Women marrying before the age of 20 naturally include relatively few who have attended college.

Within each nativity-color group, however, there was a sharp and consistent decrease with advancing age in the proportions with high school attendance and a marked in-

TABLE 18.—*Percentage distribution of wives of childbearing age in the Health Survey according to educational attainment; by nativity, color, and age*[1]

Nativity, Color and Age of Wife	Total	College	High School	7th–8th Grades	Under 7th Grade
Native White					
Total 15–44.. . .	100.0	11.6	52.9	29.5	6.0
15–19	99.9	1.9	70.3	22.7	5.0
20–24	99.9	7.8	66.1	22.6	3.4
25–29	100.1	12.9	58.4	24.7	4.1
30–34	100.0	13.4	51.0	29.7	5.9
35–39	100.0	12.3	46.7	33.6	7.4
40–44	100.1	11.2	42.1	37.5	9.3
Foreign White					
Total 15–44.	100.0	2.9	22.5	39.7	34.9
15–19	100.0	.0	69.9	27.7	2.4
20–24	100.1	4.3	49.5	35.3	11.0
25–29	100.1	4.4	37.4	41.0	17.3
30–34	100.0	3.5	27.3	43.3	25.9
35–39	100.0	2.6	19.5	40.2	37.7
40–44	100.0	2.0	13.2	37.2	47.6
Colored					
Total 15–44... ...	100.0	3.8	29.6	26.3	40.3
15–19	100.0	0.9	48.8	26.9	23.4
20–24	100.0	3.0	45.1	23.7	28.2
25–29	100.0	4.4	32.7	27.6	35.3
30–34	100.0	4.1	25.5	27.3	43.1
35–39	100.1	3.8	21.7	26.7	47.9
40–44	100.0	4.2	19.5	24.8	51.5

[1] *See* Appendix Table 6 for numerical distribution.

crease with advancing age in proportions with school attendance limited to 6th grade or less.

Among native-white wives, the inverse relation of age to educational attainment stands in contrast to the positive association between age of wife and occupational status of the head (see p. 48). The generally better educational

status of the younger wives than of the older is doubtless
due in large part to the progress in compulsory education
in this country during the past generation.   For foreign
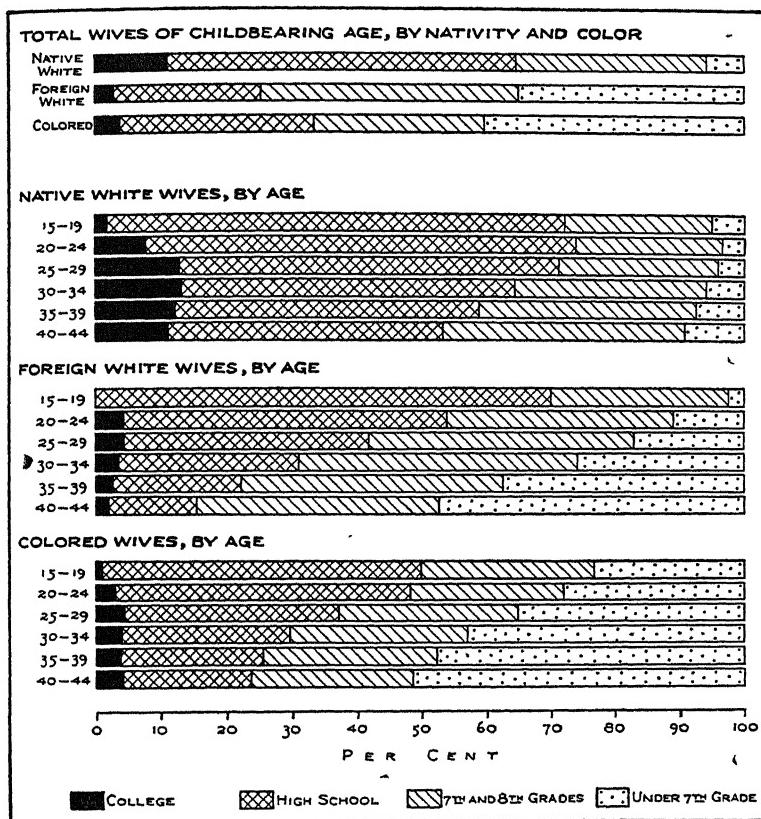
FIGURE 14.—*Distribution of wives 15–44 years of age, according to educational
attainment; by nativity, color, and age*
Surveyed cities combined.   *See* Table 18

whites, among whom the inverse relation between age and
educational status was strongest, there is probably the addi-
tional factor that a larger proportion of the younger than
of the older wives immigrated to this country as children

and hence became subjected to our educational opportunities and school-attendance requirements. Thus, the proportion of foreign-white wives 15–19 reporting high school (70 per cent) was about as high as that for native-white wives of the same age, whereas at ages 40–44 only 15 per cent of the foreign wives but 53 per cent of the native wives reported high school or college attendance. The inverse association of age and educational attainment among foreign-white wives was apparently strong enough to carry with it an inverse relation between age of wife and occupational class of the head, at older ages of the childbearing span. This did not hold true for the native whites.

Attention is also called to the relatively low educational status of colored wives in the sample. Although the gross percentage with high school status was higher for the colored than for the foreign-white wives of childbearing age, the age-specific data indicate that this arises mainly from the older ages of the foreign-white women. At all ages under 35, high school attendance was less common for the colored wives than for the foreign whites. The low educational attainment of colored wives is forcibly indicated by the proportional importance of the "Under 7th Grade" category. This proportion increased markedly with age, but at all ages it was higher than that for foreign whites and greatly in excess of that for native whites. Even at youngest ages, 15–19, 23 per cent of the colored wives reported less than 7th grade status as compared with 5 per cent of the native-white wives and 2 per cent of the foreign-born wives of similar ages. Over half of the colored wives 40–44 years of age had been limited to 6th grade education or less. Inherent in these comparisons is a network of social and economic factors. The data indicate that, although there has been marked improvement in the educational status of Negroes during the past twenty-five years, much remains to be done before there is equality of educational opportunity along lines of color.

In Appendix Table 7, the distributions are given by region and size of city. The chief point of interest is the relatively high educational attainment reported by wives in the Mountain and Pacific areas. Among the native-white wives, for instance, the proportions of those reporting entrance into high school or further education were 82 and 86 per cent in the two size groups of Mountain cities, and the range was from 76 to 82 per cent in the Pacific area. Corresponding figures extended from 51 to 63 per cent in the East and from 56 to 64 per cent in the Central areas.

The reported educational status of native-white wives in the South was also relatively high. In this connection, however, it should be pointed out that enumerators were instructed to accept local definitions of "high school." At the time of the *Survey* "high school" in the South generally embraced grades 8–11 inclusive instead of 9–12. This situation shows up in the very low proportions in the 7th–8th grade categories for the South, because individuals included therein were mainly of 7th grade status. The acceptance of local definitions of "high school" also resulted in the ruling that for certain areas in Massachusetts where entrance into high school follows completion of the 9th grade, individuals reporting entrance into the 9th grade but no further schooling would be coded the same as those reporting 8th grade status in other areas. Conclusions regarding regional variations must, therefore, be drawn with considerable reservations in so far as the present data are concerned. At least the relatively high educational attainment in the West, however, is confirmed by recent data from the 1940 Census.[6]

[6] A recent Census release presented data concerning the highest grade of school completed by persons 25 years old and over in 1940. The data, by Region, Geographic Division, and State, afforded no subdivision by color or urban-rural residence. The available figures indicated the highest median number of years of schooling in the Pacific Division (9.7 years) and next highest in the Mountain Division (8.9 years). The three divisions of the South ranked lowest. The median for the total South was 7.8 years. Further breakdown of the Census data must

The *Survey* data by size of city, Appendix Table 7, re-
vealed little in the way of systematic differences in educa-
tional attainment by size of city.   Standardization[7] for this

be awaited to ascertain the educational standing of the native whites in the urban
South.   *See* U. S. Bureau of the Census: Educational Attainment of the Popula-
tion 25 Years Old and Over in the United States: 1940.   Series P-10, No. 8, April
23, 1942.

[7] Below, Adjustment A presents the educational composition that would be
expected if the city-size distributions were similar to those of the 1930 Census urban
populations *of corresponding nativity and color.*   Comparisons with the unadjusted
figures indicate that the existing under-representation of small cities had little
effect upon the composition of the samples by educational status.

Adjustment B presents the educational composition that would be expected if
the nativity-color groups were similar with regard to residence by size of city.
The city-size distribution of the *total* 1930 Census urban population was used as a
common standard.   The differences by nativity and color in educational distribu-
tions were found to remain virtually unchanged when standardized for size of city.

Adjustment C presents the educational composition by nativity and color,
standardized for age.   The age-specific data for each nativity-color group were
weighted according to the age-distribution of all urban married women 15–44 years
of age in the 1930 Census.   This type of standardization effected little change in
the educational distributions for native-white and colored wives.   For the foreign-
white wives, it served to increase the proportion at high school level.   Nevertheless,
low educational status of foreign whites, in comparison with that of native whites,
persisted strongly.

*Distribution of wives 15–44 years of age by educational attainment   Actual and adjusted for city-size
and age, by nativity and color*

Nativity, Color, and Type of Adjustment	Total	College	High School	7th–8th Grades	Under 7th Grade
Native White					
Unadjusted	100.0	11 6	52.9	29.5	6.0
Adj. A (City–Size)	100.0	12.4	53.2	28.1	6.3
Adj. B (City–Size)	100.0	12.2	53.1	28.5	6.2
Adj. C (Age)	100.0	11.3	53.3	29.4	6.0
Foreign White					
Unadjusted	100.0	2.9	22.5	39.7	34.9
Adj. A (City–Size)	100.1	3.3	23.6	38.0	35.2
Adj. B (City–Size)	100.0	3.6	24.3	36.6	35.5
Adj. C (Age)	100.0	3.2	30.6	39.2	27.0
Colored					
Unadjusted	100.0	3.8	29.6	26.3	40.3
Adj. A (City–Size)	99.9	3.6	28.5	24.6	43.2
Adj B (City–Size)	99.9	3.6	28.8	24.8	42.7
Adj C (Age)	99.9	3.8	29.2	26.2	40.7

factor, therefore, effected no substantial change in the actual distributions for the combined sample.   It should be emphasized, however, that the *Survey* data for eighty-three cities may not give a true picture of variations in educational attainment of urban native whites, by region and size of city.   More conclusive evidence on this point should soon be available from the 1940 Census materials.

AGE DISTRIBUTION OF WIVES BY EDUCATIONAL ATTAINMENT

The age distribution of women by educational status, Table 19 and Figure 15, gives the converse of the educational composition by age.   As a group, the women reporting under 7th grade attainment in formal schooling were oldest and those reporting high school status were youngest.[8] In Figure 16 the data are arranged to show age differences by nativity and color among women of similar educational attainment.   At each level of education the foreign-white wives were conspicuous for their relatively high proportion in the older ages.   The colored wives were characterized as youngest but their ages closely resembled those of native whites.   An important implication of age differences by educational status and nativity, however, is the necessity of standardizing the fertility rates for age.

STANDARDIZED RATES FOR THE TOTAL SURVEY

(a) *Native White*.   A generalized picture of the association between birth rates of married women during one year and amount of schooling received by the wives is given in Table 20 and Figure 17, based upon data for the combined cities.   Within certain limits it is apparent that birth rates varied inversely with educational status in each of the three nativity-color groups.   In a fourfold division of native-white wives, the lowest birth rate was found for women who entered college, and in successive order were the rates for women reporting attainments of high school, 7th–8th grades,

[8] An important factor in the younger average ages of high school wives than of college wives is doubtless the later age at marriage within the latter group.

and under 7th grade. The disparity between the rates for
the two upper educational classes was slight, a situation
which has been found in other studies.[9]   As will be noted in

TABLE 19.—*Age distribution of wives of childbearing age in the Health Survey;
by nativity, color, and educational attainment*[1]

Nativity, Color and Age of Wife	Total	College	High School	7th–8th Grades	Under 7th Grade
Native White					
Total 15–44.......	100.0	100.0	100.0	100.0	100.0
15–19	2.4	.4	3.2	1.9	2.0
20–24	14.9	10.1	18.6	11.4	8.5
25–29	23.0	25.6	25.3	19.2	15.6
30–34	21.4	24.8	20.6	21.6	21.1
35–39	20.7	22.1	18.3	23.6	25.5
40–44	17.6	17.0	14.0	22.3	27.3
Foreign White					
Total 15–44 . ..	100.0	100.1	100.0	100.1	100.0
15–19	.2	.0	.5	.1	*
20–24	3.9	5.8	8.6	3.5	1.2
25–29	12.5	19.2	20.9	13.0	6.2
30–34	20.6	25.5	25.0	22.5	15.3
35–39	29.3	26.3	25.4	29.7	31.6
40–44	33.5	23.3	19.6	31.3	45.7
Colored					
Total 15–44	100.0	99.9	100.0	100.1	99.9
15–19	4.2	1.0	6.9	4.3	2.4
20–24	16.0	12.5	24.4	14.5	11.2
25–29	23.0	26.7	25.4	24.2	20.1
30–34	20.5	22.2	17.7	21.3	21.9
35–39	22.1	21.9	16.2	22.4	26.2
40–44	14.2	15.6	9.4	13.4	18.1

[1] *See* Appendix Table 6 for numerical distribution.
* Less than 0.1 per cent.

[9] Notestein and Kiser found from studies of small samples collected in Brooklyn
Columbus, and Syracuse, that the differences between total fertility rates for wives
of college men and wives of high school men were small in comparison with those
existing between wives of high school and common school men. (Notestein and
Kiser, 1935, pp. 34–35.)

   Goodsell's analysis of data from questionnaires returned by 475 married college
women and from 461 married non-college women (friends and relatives of the
college women) indicated that the college women were only slightly less fertile than
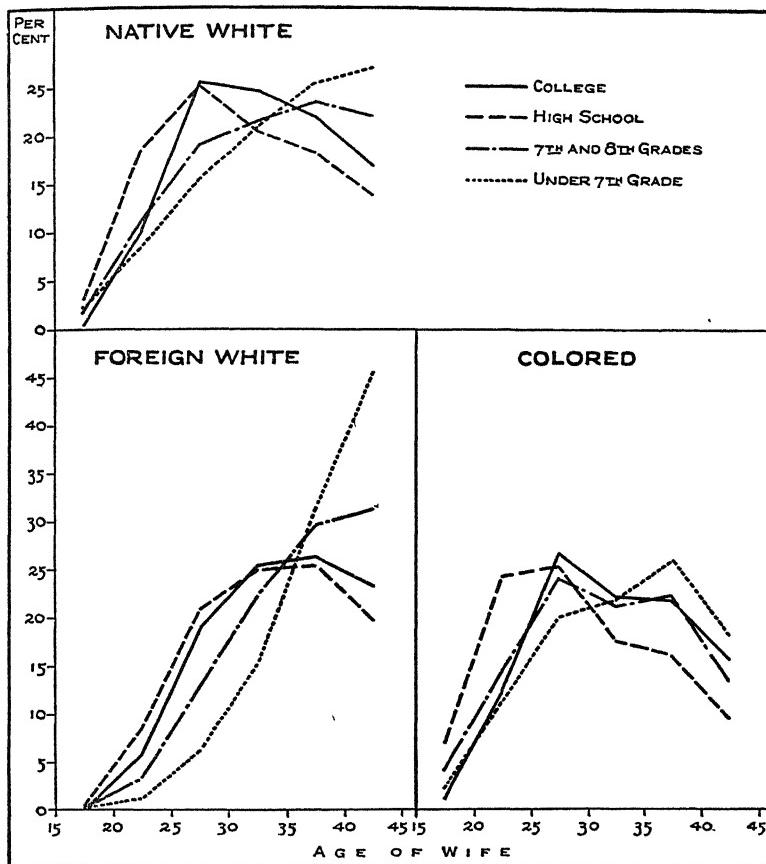
FIGURE 15.—*Age distribution of wives 15–44, by educational attainment; within groupings by nativity and color*
Surveyed cities combined. *See* Table 19

the non-college women "of the same walk of life." The slight difference that did exist was found to be due entirely to differences in age at marriage. (Goodsell, 1936.)

A study similar in method and results to Goodsell's was one by Smith published in 1900. Smith's analysis of fertility data for 343 wives who were college graduates and for 313 non-college wives (sisters, cousins, and friends of the college graduates) suggested that the slightly higher average number of births for the non-college group could be attributed wholly to earlier age at marriage (Smith, 1900). Although Smith's study, like the later ones listed above, was based upon small samples, it suggests that the small degree of the difference between the marital fertility levels of the college and high school groups may not be of recent origin.

a later chapter, however, when births are related to all
women of given educational attainment, the fertility indices
for college women fall well below those for high school
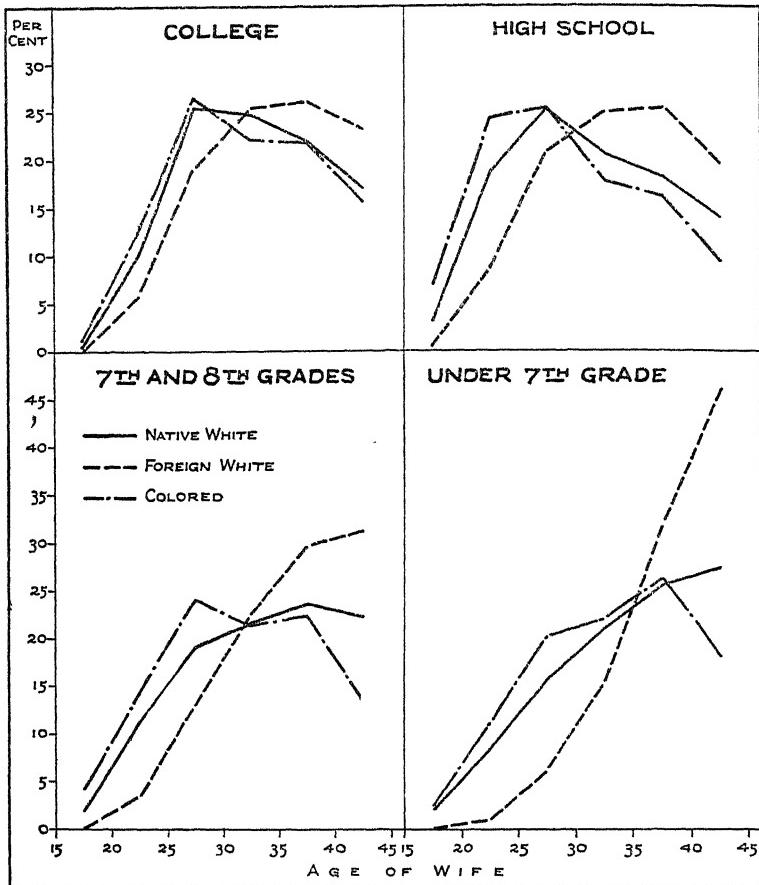
FIGURE 16.—*Age distribution of wives 15–44, by nativity and color; within groupings
by educational attainment*
Surveyed cities combined. *See* Table 19

women because marriages are less frequent among the former
group, especially at early ages.   It is, nevertheless, of inter-
est to find that among native-white urban women *who are*

married, the attainment of high school status is apparently sufficient to effect family limitation to almost the same extent as that existing among married women of college attain-

TABLE 20.—*Fertility rates in 1935 among wives of childbearing age in the Health Survey; by educational attainment, nativity, and color. Data shown in relation to educational composition of the samples*

Rates standardized for age

Educational Attainment of the Wife	Live Births per 1,000 Wives			Per Cent Distribution by Educational Attainment			Number of Wives		
	White			White			White		
	Native	Foreign	Colored	Native	Foreign	Colored	Native	Foreign	Colored
Broad Classification									
Total.	96	111	86	100.0	100.0	100.0	284,246	51,901	39,511
College	87	82	64	11.6	2.9	3.8	32,847	1,477	1,496
High School	91	108	85	52.9	22.5	29.6	150,365	11,596	11,647
7th-8th Grades...	105	109	85	29.5	39.7	26 3	83,833	20,514	10,352
Under 7th Grade ..	118	125	87	6.0	34.9	40.3	17,013	18,022	15,881
Unknown... .							188	292	135
Detailed Classification									
Common School									
8th Grade...... .	103	109	87	23.9	33.7	14.2	67,864	17,379	5,595
7th Grade	113	110	84	5.6	6.1	12.1	15,969	3,135	4,757
6th Grade .	119	136	89	3.2	10.8	12.5	9,151	5,562	4,926
5th Grade.. ..	114	100	81	1.6	6.7	11.8	4,425	3,433	4,662
4th Grade..	119	128	88	0.8	6.3	9.3	2,249	3,252	3,653
Under 4th Grade .	121	122	91	0.4	11.2	6.7	1,188	5,775	2,640
3rd Grade..	92	121	90	0.2	2.1	2.1	486	1,075	827
Kindergarten, 1st- 2nd Grade	142*	135	84	0.1	2.1	2.3	290	1,084	911
No Schooling	128	119	99	0.1	7.0	2.3	412	3,616	902

* Rate based on 290 wives.

ment.   This may not be a new development, but whether it is or not, there has doubtless been a large increase in the proportion of women who attained high school.   Since over

half of the native-white urban wives in the present *Survey* sample attained high school status without further school- ing, the importance of the low fertility of this group is readily apparent.
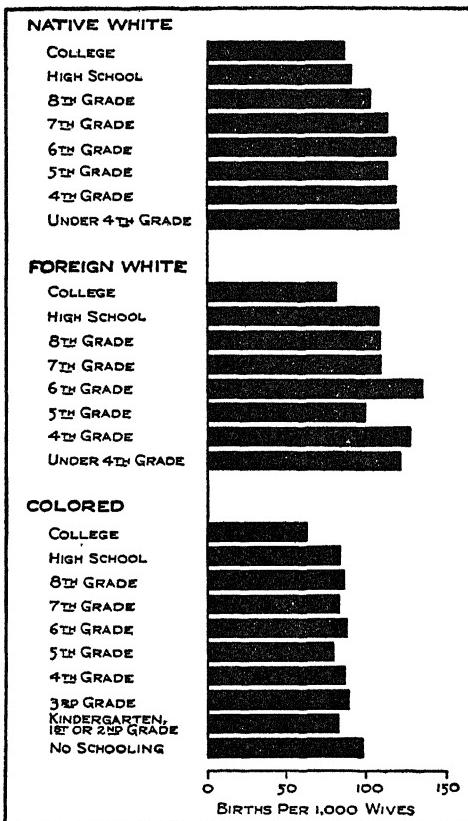
FIGURE 17.—*Educational status in relation to fertility rates in 1935 among wives 15–44 years of age, by nativity and color*
Rates standardized for age and surveyed cities combined.   *See* Table 20

Although the average birth rate for wives of less than 7th grade status was highest in the broad classification, it is well to keep in mind two points of related interest.   In the first place, only 6 per cent of the urban native-white married

women fell into this group. In the second place, the sub-
division of these women into more detailed educational
classes failed to indicate any systematic increase in birth
rates with a lowering of educational attainment. There was
little or no difference between any two of the four rates for
women of 6th, 5th, 4th, or under 4th grades.[10] Marked
variations were found within the small group reporting less
than 4th grade status, but they were unsystematic and prob-
ably due in large part to chance. Whatever this latter
situation may be, its practical importance is slight in so far
as native-white urban wives are concerned,[11] since only a

[10] The differences $\pm$ σ differences of birth rates between given educational classes
are presented below by nativity and color. With the reservations described on
p. 62 (footnote 25a), the italicized figures may be regarded as indicating significant
differences (difference $>$ 2 σ difference).

Classes Compared	Difference $\pm$ σ Difference of Birth Rates		
	Native White	Foreign White	Colored
College – High School	*4* $\pm$ *1.8*	*26* $\pm$ *8.5*	*21* $\pm$ *7.6*
College – 7th–8th Grades...	*18* $\pm$ *2.0*	*27* $\pm$ *8.3*	*21* $\pm$ *7.6*
College – Under 7th Grade	*31* $\pm$ *2.8*	*43* $\pm$ *8.6*	*23* $\pm$ *7.5*
High School – 7th–8th Grades	*14* $\pm$ *1.3*	1 $\pm$ 3.6	0 $\pm$ 3.8
High School – Under 7th Grade..........	*27* $\pm$ *2.4*	*17* $\pm$ *3.8*	2 $\pm$ 3.5
7th–8th Grades – Under 7th Grade.......	*13* $\pm$ *2.6*	*16* $\pm$ *3.3*	2 $\pm$ 3.5
8th Grade–7th Grade.	*10* $\pm$ *2.7*	1 $\pm$ 6.1	*3 $\pm$ 5.5
7th Grade–6th Grade	6 $\pm$ 4.2	*26* $\pm$ *7.3*	5 $\pm$ 5.7
6th Grade–5th Grade	*5 $\pm$ 5.9	*36 $\pm$ 7.2	*8 $\pm$ 5.7
5th Grade–4th Grade....	5 $\pm$ 8.3	28 + 7.6	7 $\pm$ 6.1
4th Grade–Under 4th Grade	2 $\pm$ 11.7	*6 $\pm$ 7.2	3 $\pm$ 7.3
4th Grade–3rd Grade.............	*27 $\pm$ 15.9	*7 $\pm$ 11.6	2 $\pm$ 10.9
3rd Grade–Kindergarten, 1st and 2nd Grades...... .	*50* $\pm$ *23.8*	14 $\pm$ 14.2	*6 $\pm$ 13.5
Kindergarten, 1st and 2nd Grades–No Schooling.....	*14 $\pm$ 26.4	*16 $\pm$ 11.4	15 $\pm$ 13.4

* The higher educational class of the two compared had the higher birth rate. In other cases
the opposite type of relation was observed. *See* Table 20.

[11] The problem of illiteracy and meager education among adults, white and
colored, is, of course, greater in neglected rural areas, and there are marked differ-
ences by states in proportions illiterate. Winston's analysis of 1920 Census data
regarding percentages illiterate, number of children under 15, and number of ever-
married women 15–54 years of age, by state, led him to the conclusion: "The
correlation between fertility, as measured here, and illiteracy is +0.62 $\pm$ 0.06, the
relationship being linear. This is interpreted as meaning that illiterates have
larger families, on the average, than do the literate." (Winston, 1930, p. 758.)

negligible proportion of such women failed to advance beyond the 3rd grade at school.

(b) *Foreign White.* In the broad educational classification of foreign-white wives of childbearing age in the total sample, the range of the rates from lowest to highest was a little wider than that observed for the native whites, Table 20. The average rate for foreign-white wives of college attainment fell well below that for foreign-white wives of high school status and somewhat below that for native-white wives of college rank. At the other extreme, the average rate for foreign-white wives reporting less than 7th grade in schooling was a little higher than that for native-white wives of the same educational level.

Despite the above, however, the more detailed classifications, Figure 17, indicated that systematic increases in the birth rate with lowered educational attainment were no more in evidence among foreign than among native whites. Below 7th-grade status, as among the native whites, there was no internal manifestation of the inverse relationship. Unlike the situation observed among native whites, birth rates essentially similar in magnitude were found among foreign-white wives reporting high school, 8th-grade, and 7th-grade status. Thus, whereas the average birth rate of foreign-white wives of college status (constituting 3 per cent of the foreign group) was relatively low and that for wives below 7th-grade status (constituting over one-third of the foreign group) was relatively high, further refinements of the inverse relation were not manifested in the more detailed classifications by educational status. Furthermore, as will be seen later, the instances of the inverse relation that have been observed in the total sample of foreign whites do not uniformly hold true in the analysis by age and by area and size of city. For proper perspective, it is also well to restate here that the foreign-white groups of childbearing age are rapidly diminishing in numerical and proportionate importance.

(c) *Colored.* The combined data for urban colored wives in Figure 17 suggest that educational status had bearing on the fertility rates of this group only in so far as extreme educational classes were concerned. The relatively few reporting college attendance were characterized by fertility rates well below the level of those for women who did not report entrance into college. On the other hand, the rate for women reporting high school training was almost as high as that for any lower group except the sheer illiterate, those reporting no schooling whatsoever. Since both of the extreme groups, taken together, included only 6 per cent of the colored wives in the present sample, the observed variations in marital fertility rates by educational status were of very minor consequence.

AGE-SPECIFIC RATES FOR THE TOTAL SURVEY

(a) *Native White.* The important points revealed by the age-specific data for native-white wives (Table 21, Figure 18) may be stated as follows: (1) The total range of variations in fertility rates by educational attainment was much more pronounced among wives under 25 years of age than among those of older age. (2) This was due mainly to the extremely low fertility level of college wives under 25 years of age as compared with that of other educational classes. (3) At ages beyond 25 the high school wives were characterized by lowest fertility and the least educated wives were characterized by highest fertility. At these ages the rates for wives of college status tended to be as high as those for wives reporting 7th–8th grade and were consistently surpassed only by those for wives reporting less than 7th grade. Apart from the relatively high fertility rates of the least educated women, however, the inter-class variations in marital fertility rates were not of marked consequence among wives over 25 years of age.

The present materials afford no direct basis for interpreting the peculiar pattern of the age-specific birth rates

of college wives. It appears likely, however, that the con-
spicuously low fertility of college wives of youngest ages

TABLE 21.—*Age-specific fertility rates in 1935 among wives of childbearing age in
the Health Survey; by educational attainment, nativity, and color*

Nativity, Color and Age of Wife	Live Births per 1,000 Wives			
	College	High School	7th–8th Grades	Under 7th Grade
Native White				
Total 15–44[1] ...	87	91	105	118
15–19	137	237	296	251
20–24	147	192	223	223
25–29	138	123	140	150
30–34	89	76	80	111
35–39	40	36	42	62
40–44	12	12	16	27
Foreign White				
Total 15–44[1] . .	82	108	109	125
15–19	—	207*	—	—
20–24	116*	214	219	271
25–29	138	161	158	157
30–34	82	93	95	103
35–39	59	49	47	54
40–44	6	14	15	24
Colored				
Total 15–44[1]. ...	64	85	85	87
15–19	—	308	306	284
20–24	176	186	163	168
25–29	58	96	98	93
30–34	54	61	72	74
35–39	18	33	39	50
40–44	0	17	17	19

[1] Rates shown for totals are standardized for age.
* Age-specific rates based on 25–99 cases. These were not plotted in Figure 18.
See Appendix Table 6 for numerical distribution of wives.

arises from a greater tendency for this group to postpone the
initial births. The higher birth rate for college wives than
for high school wives at ages 25–29 and thereafter is possibly

due to higher proportions of first births among wives of college status. This could come about not only from the eventuation of the births which were postponed by those married at ages younger than 25, but also by the greater
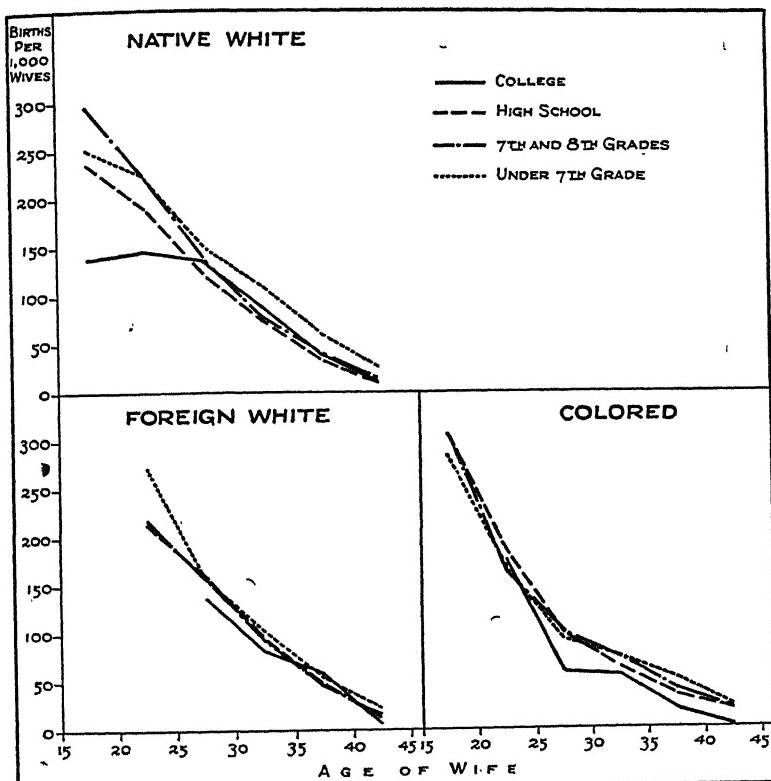
FIGURE 18.—*Age-specific fertility rates in 1935, by educational attainment, nativity, and color of the wife*
Surveyed cities combined. *See* Table 21

proportion of first births (accruing from late marriages) in the college group than in the high school group.

(b) *Foreign White.* The age-specific data for foreign-white wives, Figure 18, emphasize similarity rather than

variation of fertility rates by educational class. This impression is probably due in part to the inadequacy of the data for wives under 25 years of age. Adequate samples for the 15–19 age group would probably indicate a wide spread between the rates for the college and "Under 7th Grade" classes. A suggestion of this possibility is afforded by the high fertility rate for wives 20–24 reporting "Under 7th Grade" and by the low rate for college wives of this age. Whatever this situation may be, foreign-white wives under 25 years of age now form a proportionately unimportant segment of our population, and the *Survey* data strongly suggest that after age 25 there is marked similarity in the marital fertility rates for the three educational classes below the college level.

(c) *Colored.* Among the colored wives the age-specific rates for the college group tended to fall into lowest position, but otherwise there was little variation in fertility rates by educational attainment (Figure 18). Unlike the situation among native whites, there appeared to be no tendency whatsoever for the variations to be more pronounced at younger than at older ages of the childbearing span. In this connection it may be noted that the rates for the colored wives of college status remained in lowest position throughout ages 25–44. Whatever that situation may be, the proportion of colored wives who attended college was very small and aside from this minority the lack of a relationship of any consequence between fertility rates and amount of schooling appeared to hold true at all ages of the childbearing period.

(d) *Differences by Nativity and Color.* Figure 19 facilitates comparison of age-specific birth rates by nativity and color among wives of similar educational attainment. Essentially the same picture is revealed at each educational level. The rates for colored wives were higher than those for whites at youngest ages, considerably lower during the middle ages of the childbearing span, and about the same at

the oldest ages.   In other words, as compared with whites there was among urban Negroes a more rapid decline of birth rates with age during the first ten or fifteen years of the childbearing span and a less rapid decline during the
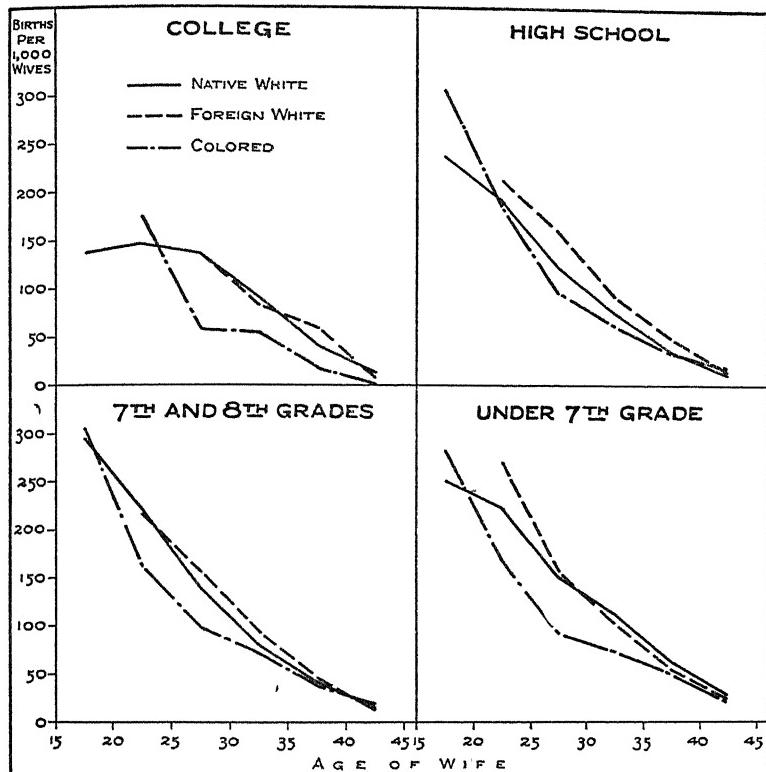
FIGURE 19.—*Comparisons by nativity and color of age-specific fertility rates for wives of similar educational attainment*
Surveyed cities combined.   *See* Table 21

last fifteen years. The age-specific data for foreign whites were sketchy but there is the suggestion that only within the high school group were the rates consistently higher than those for native whites of comparable educational attainment.

STANDARDIZED RATES BY AREA AND SIZE OF CITY

(a) *Native White*. In the main, the generalizations based
upon standardized rates previously presented in Figure 17
for the combined cities are substantiated in the analyses by
area and size of city. Among the native-white wives, how-
ever, the pattern of inverse relation between educational
status and fertility was more sharply manifested in some
area-size groups than in others. As seen in Table 22 and
Figure 20, a consistent association of this character was most
in evidence in the Eastern and Central cities of 100,000 popu-
lation or more. On the other hand, in the samples drawn
from the Pacific Coast and from one or two groups of smaller
cities in other areas, there appeared to be virtual equality
of birth rates among wives reporting college attendance,
high school status, and 7th–8th-grade status. The women
reporting less than 7th grade schooling, however, were fairly
universally characterized by highest birth rates.

The data for native whites are shown separately in Ta-
ble 23 and Figure 21 for each of the surveyed cities of 500,000
population and over in 1930. In Boston, New York, and
Detroit the rates for college wives fell conspicuously below
those for women of high school status, and the remaining
inter-class variations were consistent with the principle of
inverse association.[12] In Philadelphia, Chicago, and St.
Louis the rates for college wives were about as high as, or
higher than, those for women of high school rank, but other-
wise the inverse association was observed, albeit to a small
extent in St. Louis. In Buffalo, Pittsburgh, and Cleveland
the inter-class variations not only appeared to be relatively
slight in extent, but there were individual types of excep-
tions to the inverse order of the classes with respect to fer-
tility. In the low-birth-rate city of Los Angeles, there was
even the suggestion of a slight direct association between

[12] It will be noted that in Detroit the order of the relationship of birth rates by
educational attainment was opposite to that observed according to occupational
attainment. As previously noted, however, the differences between the rates by
occupational class were statistically insignificant.

TABLE 22.—*Fertility rates in 1935 among native-white wives of childbearing age in the Health Survey; by educational attainment of the wife, and by area and size of city*

Rates standardized for age

Size of City and Education of Wife	Live Births per 1,000 Wives					Number of Wives				
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over										
Total....						53,922	45,595			9,012
College......... ..	83	82			73	4,055	3,289			1,476
High School	108	89			71	25,534	22,144			5,936
7th-8th Grades.....	116	94			63	21,443	17,358			1,496
Under 7th Grade.	129	106			156*	2,845	2,761			104
Unknown						45	43			—
100,000–500,000										
Total.						16,706	26,573	28,855	3,735	14,560
College....	87	97	76	114	83	1,137	3,050	4,162	692	2,501
High School	103	96	66	128	83	7,308	14,017	16,779	2,528	9,023
7th-8th Grades....	110	111	79	134	84	6,511	8,387	5,202	440	2,829
Under 7th Grade..	131	137	95	—	130*	1,748	1,106	2,687	74	203
Unknown						2	13	25	1	4
25,000–100,000										
Total....						7,810	17,712	17,984		3,420
College...........	107	94	80		88	568	1,937	3,762		650
High School	117	86	79		69	4,167	9,386	11,294		2,025
7th-8th Grades....	114	108	110		87	2,493	5,478	1,756		698
Under 7th Grade...	107	140	128		—	567	902	1,166		47
Unknown.........						15	9	6		—
Under 25,000										
Total............ .						9,781	9,813	8,332	1,432	9,004
College....	86	111	98	109*	90	1,163	1,491	1,237	162	1,515
High School.	110	106	90	116	81	5,022	4,414	4,439	1,009	5,340
7th-8th Grades....	113	122	87	151*	88	2,976	3,298	1,258	224	1,986
Under 7th Grade...	116	172	111	—	61*	614	600	1,391	37	161
Unknown.........						6	10	7	—	2

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

fertility and educational status among native-white wives above 6th-grade status.
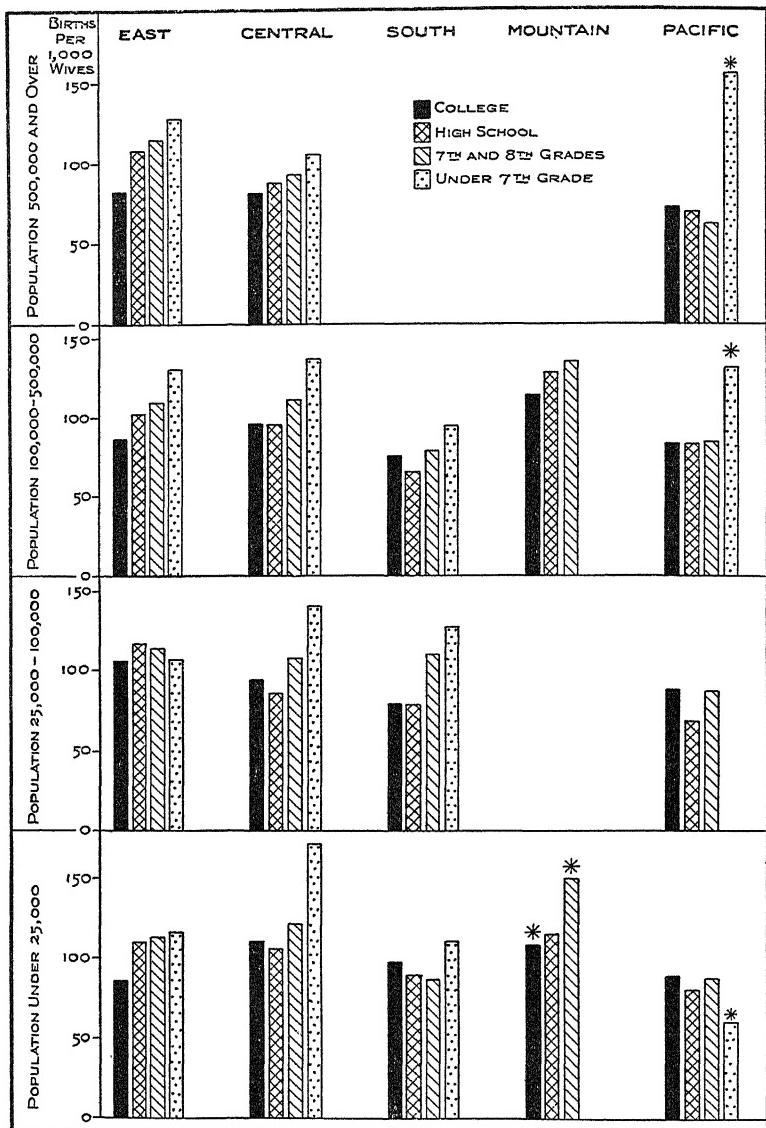
FIGURE 20.—*Educational attainment in relation to fertility rates in 1935 among native-white wives 15–44 years of age, by area and size of surveyed cities*
Rates standardized for age. *See* Table 22.
* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

area and size of city warrant no easy generalization concerning the relation between birth rates and educational status. As previously stated, the small number of foreign-white wives under 25 years of age made it advisable to

TABLE 23.—*Fertility rates in 1935 among native-white wives of childbearing age in specified cities of the Health Survey, by educational attainment*

Rates standardized for age

City	Live Births per 1,000 Wives			
	College	High School	7th–8th Grades	Under 7th Grade
Boston.....	91	126	139	160*
Buffalo	106	112	124	118
New York.	65	98	117	127
Philadelphia.	91	93	106	134
Pittsburgh......	93	116	109	118
Chicago	86	91	98	124
Cleveland...	75	87	95	89
Detroit	63	97	105	126
St. Louis	92	78	82	89
Los Angeles.	73	71	63	156*
	Number of Wives			
Boston	621	5,344	2,149	207
Buffalo.....	603	4,819	4,223	570
New York......................	1,363	6,985	6,749	515
Philadelphia...................	662	4,841	4,962	923
Pittsburgh..	806	3,545	3,360	630
Chicago.......	1,368	7,434	5,709	616
Cleveland...	572	6,387	3,984	776
Detroit......	854	4,920	2,713	552
St. Louis......	495	3,403	4,952	817
Los Angeles................. .	1,476	5,936	1,496	104

* Rate based on 100–299 wives.

restrict this part of the analysis to the 25–44 age range, Table 24. Figure 22 presents the data for the area-size groups with largest numbers of foreign-white residents. The Eastern cities of 500,000 or more, represented in this sample by about 21,000 wives, exhibited a clear-cut case of inverse

association between birth rates and educational status. Virtually the opposite result was yielded by the data for the Central cities of largest size (also represented by substantial numbers). In the remaining area-size groups, the
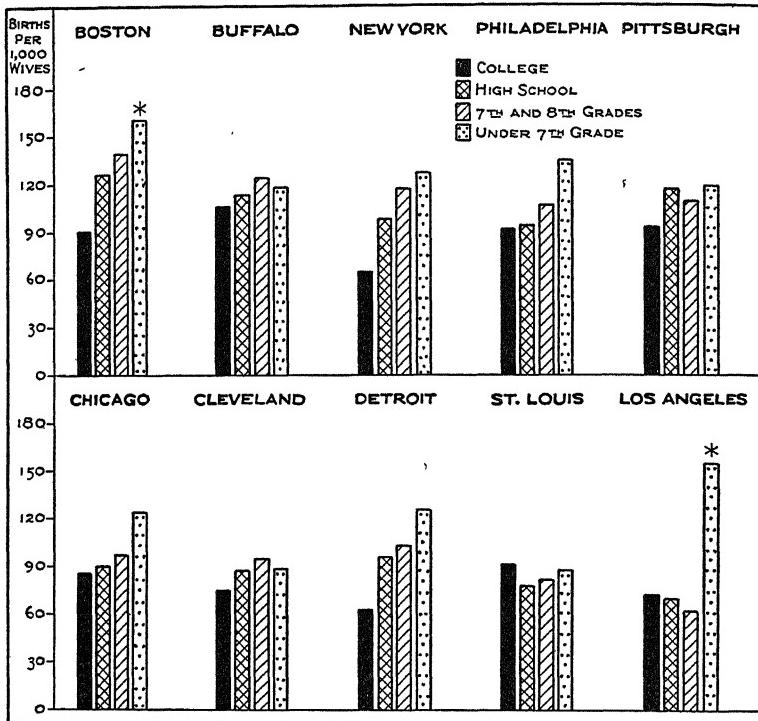
FIGURE 21.—*Educational attainment in relation to fertility rates in 1935 among native-white wives 15–44 years of age enumerated in specified cities of the "Survey"*
  Rates standardized for age. *See* Table 23.
  * Rate based on 100–299 wives.

variations of fertility rates by educational status were of small magnitude or based on too few cases to be of significance. In substance, the *Survey* data yield no uniform picture of differences in fertility rates by amount of schooling among foreign-white wives 25–44 years of age.

TABLE 24.—*Fertility rates in 1935 among foreign-white wives 25–44 years of age in the Health Survey; by educational attainment of the wife, and by area and size of city*

Rates standardized for age

Size of City and Education of Wife	Live Births per 1,000 Wives					Number of Wives				
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over										
Total						20,783	13,095			1,120
College	70	79*			—	447	267			95
High School	85	86			57	3,981	2,502			525
7th-8th Grades	92	69			67	9,040	5,038			354
Under 7th Grade	100	64			72*	7,173	5,236			146
Unknown						142	52			—
100,000–500,000										
Total						5,171	2,139	573	325	1,803
College	—	—	—	—	65*	75	86	49	34	145
High School	78	81	103*	146*	61	668	577	226	146	755
7th-8th Grades	81	72	37*	132*	73	1,845	967	150	104	691
Under 7th Grade	87	71	20*	—	70*	2,577	498	146	41	209
Unknown						6	11	2	—	3
25,000–100,000										
Total						1,304	663	152		131
College	—	—	—		—	23	25	22		13
High School	52*	79*	—		—	209	262	75		65
7th-8th Grades	68	148*	—		—	457	240	23		39
Under 7th Grade	103	166*	—		—	571	127	32		14
Unknown						44	9	—		—
Under 25,000										
Total						1,338	466	52	87	596
College	—	—	—	—	—	39	23	5	3	40
High School	74*	—	—	—	72*	216	75	25	21	212
7th-8th Grades	34	75*	—	—	31*	380	154	8	35	255
Under 7th Grade	140	66*	—	—	—	698	201	14	28	88
Unknown						5	13	—	—	1

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

(c) *Colored.* The data by area and size of community confirm the previous statements concerning the lack of variations by educational attainment in the fertility of non-college colored wives in the present sample, Table 25, Figure 23. The conspicuous exception is afforded by Los Angeles where the rate for colored wives of high school status was considerably lower than that for women who did not go beyond
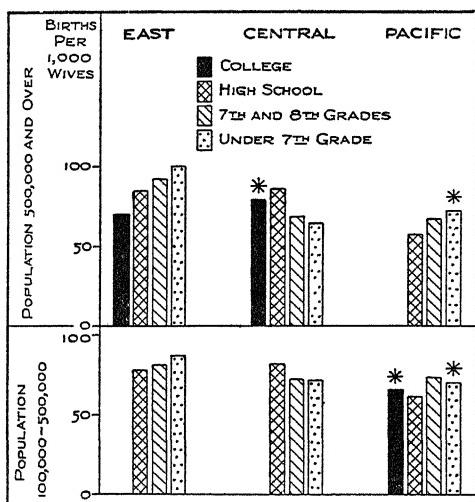
FIGURE 22.—*Educational attainment in relation to fertility rates in 1935 among foreign-white wives 25–44 years of age, in selected groups of surveyed cities*
Rates standardized for age. *See* Table 24.
* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

grammar school. This exception may have been due to the predominance of Mexicans and Orientals.

SUMMARY

The native-white wives of childbearing age were, as a group, more highly educated than the foreign-white or colored wives. In the gross comparisons between foreign-white and colored wives 15–44 years of age, only slight dif-

TABLE 25.—*Fertility rates in 1935 among colored wives of childbearing age in the Health Survey; by educational attainment of the wife, and by area and size of city*

Rates standardized for age

Size of City and Education of Wife	Live Births per 1,000 Wives				Number of Wives				
	East	Central	South	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over									
Total.					5,800	6,398			1,846
College.	52*	97	—		206	313			72
High School .	91	96		96	1,830	2,293			618
7th-8th Grades .	101	81		182	2,130	2,000			488
Under 8th Grade	93	85		192	1,597	1,764			666
Unknown					37	28			2
100,000–500,000									
Total			49		1,339	1,489	12,337	33	333
College	—	—	49	—	28	46	466	1	21
High School	94	91	72	101*	310	506	3,302	10	163
7th-8th Grades .	96	67	76	25*	510	444	2,676	6	103
Under 7th Grade .	86	87·	76	—	491	488	5,852	16	45
Unknown .		5			—	5	41	—	1
25,000–100,000									
Total.					73	593	5,268		7
College..	—	—	49*	—	—	16	213		—
High School.	—	117*	64	—	34	244	1,330		3
7th-8th Grades	—	88*	57	—	28	178	1,003		4
Under 7th Grade	—	154*	73	—	11	155	2,719		—
Unknown					—	—	3		—
Under 25,000									
Total.					416	142	3,201	35	201
College	—	—	—	—	19	10	80	—	5
High School	128*	—	89	—	107	60	768	8	61
7th-8th Grades...	69*	—	82	—	157	56	504	10	55
Under 7th Grade	80*	—	91	—	129	16	1,835	17	80
Unknown					4	—	14	—	—

* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.
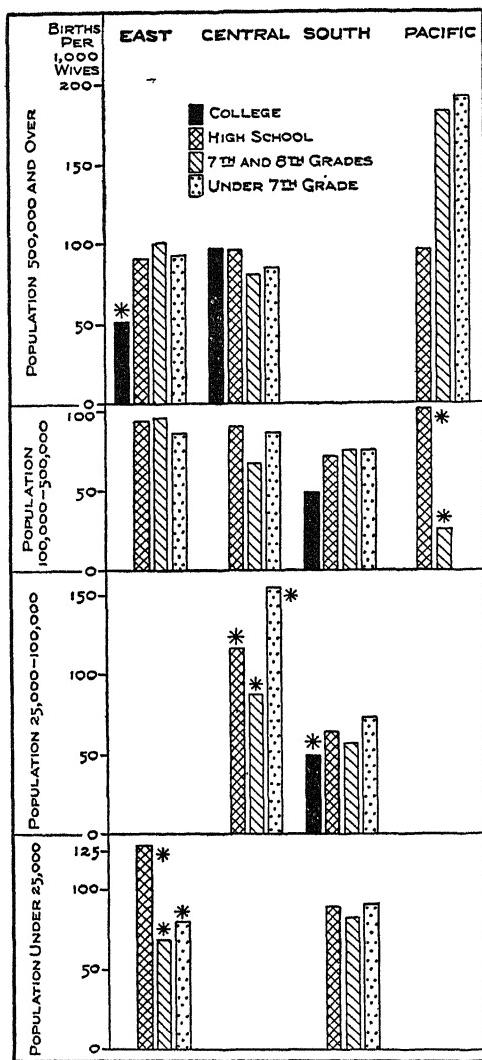
FIGURE 23.—*Educational attainment in relation to fertility rates in 1935 among colored wives 15–44 years of age, by area and size of surveyed cities*

Rates standardized for age.   *See* Table 25.

* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

ferences by educational status were found. This similarity was shown to be spurious, however, since it was due to the older ages of the foreign-white wives and to the specially marked inverse association between age and educational status of the foreign whites. The age-for-age comparisons emphasized the relatively low educational status of the colored wives.

Within each nativity-color group, the amount of schooling decreased with advancing age of the wife. This type of relationship was much less conspicuous among native-white than among foreign-white or colored wives. It was most marked among foreign whites, and a possible explanation is that as age of foreign wives increases, so increases the probability that the women immigrated to this country at an early date or as adults rather than as children. Whatever the explanation may be, the relationship was apparently sufficiently strong to reverse the normal positive association between occupational status and age.

In the converse analysis of age distribution by educational class, the wives of least educational status were oldest and those of high school attainment were youngest. This held true for each nativity-color group.

The inverse relation between educational status and birth rates, found at least to some extent within each nativity-color group, was most consistently manifested among native-white wives. Even among these the difference between the average rate for the college and high school groups was relatively small. Furthermore, although the average fertility rate for native-white wives of "Under 7th Grade" status was substantially in highest position, there appeared to be no systematic pattern of variation in fertility by *specific* grade of school attainment *within* the "Under 7th Grade" group.

The analysis by age indicated that among native-white wives the range of variations in fertility according to educational status was much wider at ages under 25 than at older

ages.   In the younger age groups the fertility rates for wives of college status were conspicuously low in relation to those for other educational classes, but at older ages the rates for wives of high school status occupied lowest positions.

By area, the inverse relation of educational attainment to marital fertility of native whites appeared to be least in evidence on the Pacific Coast.   A like result was found in the occupational data.   In that area, the low fertility levels appeared to be a fairly uniform characteristic of all educational classes above the 7th grade.

In the combined sample of foreign-white wives 15–44 years of age, the college group ranked in lowest position and the "Under 7th Grade" group in highest position with respect to fertility.   Similar to the situation among native whites was the lack of systematic variations in the fertility rates by specific grade *within* the "Under 7th Grade" group.   The analysis by age tended to emphasize similarities rather than variations in fertility rates by educational status.   The analysis by area and size of community was of necessity restricted to wives 25–44 years of age, and these data indicated a marked lack of uniformity in the character of differential fertility according to educational status.

Among colored wives in the total sample the fertility rate for the minority reporting college attendance was relatively low.   There was marked similarity in the fertility rates among the more important subdivisions of the sample along educational lines.   This similarity held true at all ages.   The analysis by area and size of city also confirmed the general lack of substantial variations in birth rates of urban colored wives by educational status.

MARITAL FERTILITY RATES IN RELATION TO FAMILY INCOME

I N PRECEDING chapters, fertility rates have been considered in relation to occupational class of the head and educational attainment of the wife. The family as a whole, however, influences the classification according to family income.[1] Furthermore, in contrast to the rather stable nature of the two attributes previously considered, especially educational status of the wife, family income is subject to change. The importance of this is enhanced by the fact that, whereas the occupational status of the household head referred to the *usual* type of work pursued, the family-income data in this study related specifically to the twelve-month period preceding enumeration. In a real sense, therefore, family-income status affords a more precise picture of the conditions in which surveyed families found themselves during or immediately after a nation-wide depression than does either the *usual* occupational status of the head or the educational attainment of the wife. Since the annual fertility data relate to the same period, it is of special interest to examine the relationship between birth rates and income status during that identical time, approximately the year 1935.

As previously described, in addition to provisions for recording family-income status, the schedule indicated whether any member of the surveyed family had received any form of public relief (including work relief) during the year pre-

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[1] *See* page 14 for a description of the income queries on the schedule.

ceding enumeration. Families receiving such assistance were denoted as "relief" cases. The enumerators were not required to solicit further information concerning income from families reporting relief, since such families were to be regarded as being of lowest economic status. For the analyses of fertility rates in relation to income, the relief recipients were classified in two ways. They are shown separately under the title "Total Relief." They are also consolidated with nonrelief families reporting incomes of less than $1,000. The rubric used throughout for the combined groups is "Under $1,000 and Total Relief."[2] The income classes above the $1,000 level are restricted to nonrelief families.

There are certain limitations to the classifications by family income. In the *Survey*, family income was determined by the combined incomes of the head of the household and of related members. Thus, an objectionable feature of a general nature is that families with relatives in residence tend to receive higher ratings than families of the same station that included no relatives. This has bearing on studies in differential fertility, in that secondary families (young couples living with parents) constitute a select group in so far as low fertility is concerned. Test analyses, based upon data for four cities,[3] indicated that among the native whites, for instance, the proportion of married women reporting that they were relatives (not wives) of the head was 14.3 per cent in the $3,000 and over group, and 4.5 per cent in the class of lowest income status. To the extent that secondary families are less fertile, the selection into upper-income

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[2] This consolidation was made in recognition of the selective factors involved in the high birth rates of relief families considered separately.

[3] From duplicate punch cards for 22,372 white married women 15–44 years of age in the *Survey* for Newark, Fall River, St. Paul, and Oakland, and for 972 colored married women of childbearing age in Newark, the following percentage distributions were derived regarding relation of the women to the heads in the households enumerated:

classes would tend to intensify the inverse relation between fertility and income.[4]

A theoretical but actually unimportant inadequacy of the classifications of married women by income is that servants residing in the households in which they were employed were given the same "family-income" status as all members of the household. This situation had its parallel in the classification of such servants according to the occupational class of the head (pp. 44–45). It was an incongruous result of repeat-

Total White / Total Colored

Relationship to Head	Total[a]	$3,000 and Over	$2,000-$2,999	$1,500-$1,999	$1,000-$1,499	Under $1,000 and Total Relief	Total[a]	$3,000 and Over	$2,000-$2,999[e]	$1,500-$1,999	$1,000-$1,499	Under $1,000 and Total Relief	Total Relief
	Total White						Total Colored						
Total .	100.1	100.0	100.0	100.0	100.1	100.1	100.0			100.0	100.0	100.0	
Wife	93.4	85.2	89.9	93.5	95.7	95.1	88.7			91.4	95.6	88.7	
Relative	5.9	13.9	9.5	6.3	3.7	3.8	6.2			5.9		6.9	
Servant	.1	.7	.1		.1		1.0						
Other Unrelated	.3	.2	.3	.1	.3	.3	3.7			2.7	3.9	3.8	
Head[b]	.4		.2	.1	.3	.9	.4				.5	.6	
Number Involved	22,372	1,631	3,016	4,155	5,560	7,825	972	25[d]	57[d]	185	206	494	

Native White / Foreign White

Relationship to Head	Total[a]	$3,000 and Over	$2,000-$2,999	$1,500-$1,999	$1,000-$1,499	Under $1,000 and Total Relief	Total[a]	$3,000 and Over	$2,000-$2,999[e]	$1,500-$1,999	$1,000-$1,499	Under $1,000 and Total Relief	Total Relief
	Native White						Foreign White						
Total	100.0	100.0	100.0	99.9	100.1	99.9	100.0	100.0	100.0	100.0	100.1	100.0	100.0
Wife	92.5	85.0	89.3	92.5	95.1	94.2	96.7	87.2	93.4	97.6	97.6	98.3	96.9
Relative	6.7	14.3	10.2	7.2	4.3	4.5	2.5	9.9	5.9	2.4	1.7	.9	1.9
Servant	.1	.4	.1	[c]			.2	2.9			.2		
Other Unrelated	.3	.3	.2	.1	.4	.4	.1	.7			.2		
Head[b]	.4		.2	.1	.3	.8	.5				.4	.8	1.2
Number Involved	17,728	1,459	2,562	3,369	4,269	5,913	4,644	172	454	786	1,291	1,021	891

[a] Includes unknown income.
[b] That is, the woman herself was designated as the head.
[c] Less than 0.1 per cent.
[d] Sample too small to warrant percentage distribution.
[e] $2,000 and over for colored.

[4] The selection of secondary families into upper-income classes probably would not occur if the classifications were based upon earnings of the husband alone. In classifications based upon occupational class of the head, the proportion of married women reporting that they were relatives of the head tended to rise a little with lowering of occupational class (p. 44).

ing certain descriptive data in the "family section" of the punch card for each member of the household. As previously stated, however, servants were not enumerated in the households in which they worked unless they "slept in." The problem was found to be negligible in samples restricted to married women. In the tests based upon data for four cities, the proportion of married women of childbearing age reporting that their relationship to the head of the household was that of servant was 0.1 per cent among the native whites, 0.2 per cent among the foreign whites, and 1.0 per cent among the colored.[5]

INCOME COMPOSITION OF THE SAMPLE

The distribution of the native-white, foreign-white, and colored wives with respect to income and relief status and the relation of income status to age of wife are of interest in themselves. As in the preceding chapters, the percentage distributions are based on the total number giving reports regarding income or relief. The number of "unknowns," however, constituted only 3 per cent of the total sample of wives 15–44 years of age.

A ready summary of the family-income status of native-white, foreign-white, and colored wives of childbearing age is afforded by Figure 24 based on Table 26.[6] As expected, the native-white group stood in the most favorable position and the colored group in the poorest. Among all families represented by wives 15–44, the proportions with incomes of $2,000 and over were 21 per cent for the native whites, 14 per cent for the foreign whites, and 2 per cent for the colored. On the other hand, those reporting incomes of less than $1,000 or receipt of relief comprised 33 per cent of the native whites, 39 per cent of the foreign whites, and 82 per

[5] The problem is of greater consequence in so far as unmarried servants are concerned. For computing net reproduction rates and other indices of fertility not restricted to married women, members of the household who were unrelated to the head were discarded. *See* page 181.

[6] For numerical distribution, *see* Appendix Table 8.

TABLE 26.—*Percentage distribution of wives of childbearing age in the Health Survey according to family income; by nativity, color, and age*[1]

Nativity, Color, and Age of Wife	Total	$5,000 and Over	$3,000–4,999	$2,000–2,999	$1,500–1,999	$1,000–1,499	Under $1,000 and Total Relief	Total Relief
Native White								
Total 15–44 . .	100.0	1.9	5.0	13.9	19.9	26.1	33.2	*13.4*
15–19	100.0	0.4	1.3	4.1	9.4	21.6	63.2	*26.4*
20–24	100.0	0.8	2.2	7.6	15.1	29.5	44 8	*16.9*
25–29	99.9	1.2	3.7	12.5	20.1	28.7	33.7	*12.9*
30–34	100.0	1.9	5.2	15.4	21.3	26.3	29.9	*12.5*
35–39	100.1	2.7	6.5	16.6	21.7	24.2	28.4	*12.2*
40–44	100.1	3.3	7.4	17.5	21.2	22.3	28.4	*12.0*
Foreign White								
Total 15–44	99.9	0.9	2.6	10.0	18.4	28.6	39.4	*17.1*
15–19	99.9	1.3	3.9	3.9	14.5	11.8	64.5	*26.3*
20–24	99.9	0.4	1.9	8.5	16.9	30.2	42.0	*16.8*
25–29	100.0	0.7	2.7	9.9	19.2	31.1	36.4	*15.0*
30–34	100.1	0.8	2.5	10.6	18.5	29.8	37.9	*15.6*
35–39	100.0	1.0	2.4	9.5	18.5	28.1	40.5	*18.2*
40–44	100.1	1.0	3.0	10.4	18.3	27.4	40.0	*17.8*
Colored								
Total 15–44. . . .	100.0			1.9*	3.5	12.3	82.3	*31.6*
15–19	100.0			0.9	1.2	6.4	91.5	*36.9*
20–24	99.9			1.4	1.9	8.8	87.8	*30.9*
25–29	100.1			2.1	3.1	11.6	83.3	*29.8*
30–34	99.9			2.0	3.8	13.6	80.5	*30.8*
35–39	100.0			1.9	4.2	13.2	80.7	*32.8*
40–44	100.0			2.4	5.0	15.5	77.1	*33.0*

[1] *See* Appendix Table 8 for numerical distribution.

* The top-income class used for the colored wives is $2,000 and over. This class is virtually equivalent to the $2,000–$2,999 group for whites since only 0.5 per cent of the colored wives reporting $2,000 and over had incomes in excess of $3,000.

cent of the colored wives. The relief recipients alone included 13 per cent of the native whites, 17 per cent of the foreign whites, and 32 per cent of the colored.[7]

[7] In terms of need for assistance, the colored families in this sample were apparently not more favored by relief agencies than were the whites. For every family on relief, the average number of *nonrelief* families reporting less than $1,000 was: native whites, 1.5; foreign whites, 1.3; colored, 1.6.

The income distributions are given by broad region and size of city in Appendix Table 9. A surprising situation revealed by those data was the failure of the South to rank low with respect to income status of native-white families in the *Survey*. In fact, there was little in the way of regional variations in income status reported by native-white wives in cities of comparable size and above 25,000 population. The differences that did exist were in the direction of high status in the Pacific and Southern areas.[8] In cities of smallest size, the income status of native-white wives was highest in the Pacific area and lowest in the Mountain region.

Among the foreign whites the income status tended definitely to be higher in the South than in other areas. This was to be expected. There are relatively few foreign whites in Southern cities but the proportion of these engaged in business is unusually high (Appendix Table 5).

Among the colored families in the *Survey*, those in the South reported the lowest incomes and those in the Pacific area (mainly Mexicans and Orientals) reported the highest incomes. Despite the low-income status of the Southern colored families, the proportions in "relief" classes were much lower than in Eastern and Central cities of comparable size, and about the same as those for the Pacific colored families.

Within each region the income status, as reported by wives in the *Survey*, tended to rise with increasing size of city. This type of relationship was most consistently manifested for native-white wives, but it also held true to some extent among the foreign-white and colored groups.

In Figure 24, the income compositions are shown by age of wife. Among the native whites there was rather marked improvement in family-income status with advancing age of wife throughout the childbearing span. A similar type of

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[8] The failure of the South to rank low in income status of urban native-white families was possibly due to deficiencies in sampling in that area.

relationship was found between age of wife and occupational
status of the head.
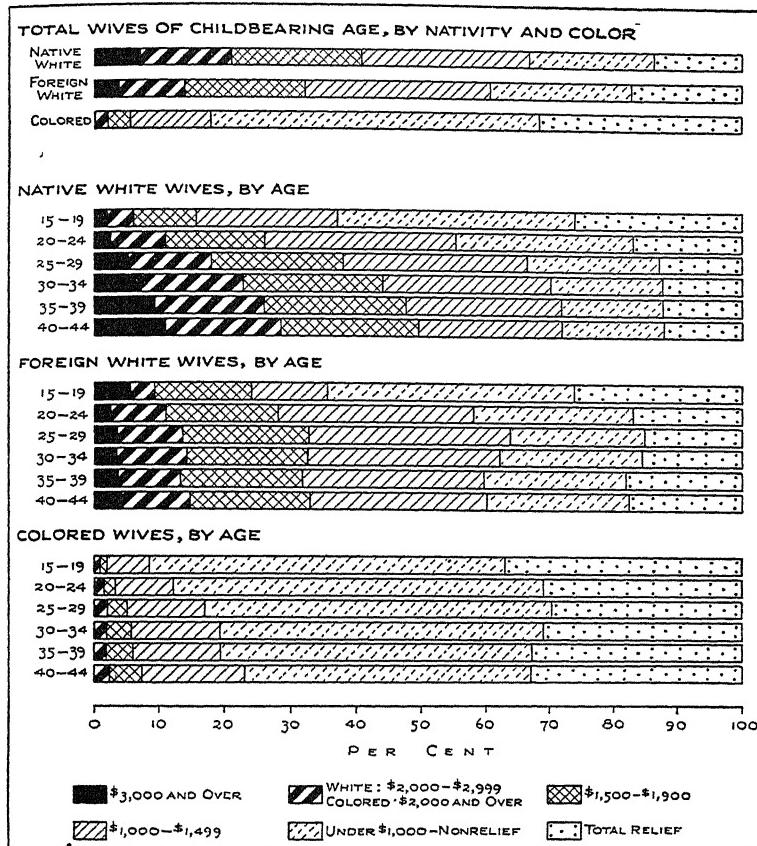
FIGURE 24.—*Distribution of wives 15–44 years of age, according to amount of family
income; by nativity, color, and age*
Surveyed cities combined.   *See* Table 26

The proportions of foreign-white wives reporting family
incomes of $2,000 and over increased a little with age up to
35.   At later ages the positive association of income with
age was virtually absent.   This situation corresponds to the
relation of age to occupational class of the foreign whites.

It probably reflects the limited education and earning ability of the husbands of these older foreign-born women. The data, however, cannot be interpreted as indicating that foreign-white bread-winners are less able than native whites to climb the occupational ladder or to increase their earnings during the age periods considered. As previously stated, the data do not relate to time-trends among the same individuals but to a surveyed population subdivided by age.

Among the colored wives of the sample the most conspicuous characteristic (Figure 24, lower section) is the low-income status at all ages. Some little improvement in economic status with advancing age was suggested, but the proportion of wives reporting family incomes of $1,000 and over ranged only from about 9 per cent at ages 15–19 to about 23 per cent at ages 40–44. On the other hand, the proportions reporting receipt of relief tended first to decline and then to increase with advancing age during the 15–44 span.

The lack of any appreciable positive association of age with income among the colored group is not surprising, because there was little change with age in the occupational composition. As among the foreign whites, the educational equipment of colored wives in later ages of the childbearing span was much poorer than that of colored wives at younger ages. It may be assumed that a similar difference in educational attainment, by age, held true for the husbands of these women. This factor would tend to obscure any actual improvement of economic status with advancing age. The drawing of color lines in occupational opportunity, however, is a basic element in the under-privileged status of the colored group at all ages.

The foregoing data have indicated that among native whites particularly, income status was associated in a positive manner with size of city and with age. Certain questions, therefore, arise concerning the bearing of these rela-

tionships on the income distributions for wives 15–44 in the total *Survey*. To what extent would the observed distributions by income be modified if adjustment were made for under-representation of small cities? To what extent would the observed differences in income status by nativity and color persist if the distributions were standardized with respect to size of city and age? As indicated,[9] the distributions of the total samples adjusted for existing under-repre-

[9] Below, in Adjustment A, the income distributions for the respective city-sizes were weighted according to the city-size distribution of the 1930 populations for each nativity and color. This indicated virtually no influence of under-representation of small cities on the income distribution of each nativity-color group.

In Adjustment B, the city-size distribution of the total 1930 urban population was used as a common standard for the three nativity-color groups. This indicated that the differences by nativity and color in income distributions remain virtually unchanged when differences in size of city are ruled out.

As indicated in Adjustment C, the differences by nativity and color in income composition of wives 15–44 remain about the same after standardizing for age. The process was that of weighting the age-specific data for each nativity-color group according to the age distribution of all urban married women 15–44 years of age in the 1930 Census.

Distribution of wives 15–44 years of age by family income. Actual, and with adjustment for city-size

Nativity, Color, and Type of Adjustment	Total	$3,000 and Over	$2,000–2,999*	$1,500–1,999	$1,000–1,499	Under $1,000 and Total Relief	Total Relief
Native White							
Unadjusted	100.0	6.9	13.9	19.9	26.1	33.2	13.4
Adj. A (City-Size)................	100.0	6.3	13.1	19.1	26.1	35.4	13.6
Adj. B (City-Size)	100.0	6.4	13.3	19.2	26.1	35.0	13.6
Adj. C (Age).............	99.9	6.8	13.7	19.6	26.0	33.8	13.7
Foreign White							
Unadjusted....	100.0	3.6	10.0	18.4	28.6	39.4	17.1
Adj. A (City-Size).........	100.0	3.3	9.8	17.6	28.3	41.0	17.5
Adj. B (City-Size)................	100.0	3.2	9.7	17.1	27.9	42.1	17.6
Adj. C (Age).....................	100.0	3.4	9.6	18.2	28.6	40.2	17.0
Colored							
Unadjusted......................	100.0		1.9	3.5	12.3	82.3	31.6
Adj. A (City-Size).........	99.9		1.6	3.0	10.8	84.5	28.8
Adj. B (City-Size).........	100.1		1.7	3.2	11.2	84.0	28.9
Adj. C (Age).....................	99.9		1.9	3.5	12.4	82.1	31.6

* For colored, $2,000 and over.

sentation of small cities (Adjustment A) differ only slightly from those actually found. Likewise, standardization for city-size (Adjustment B) and for age (Adjustment C) effected little change in the income distributions for each nativity-color group.[10]

AGE DISTRIBUTION OF WIVES BY FAMILY INCOME

In Table 27 and Figure 25 percentage age distributions by income are presented. It is noted that within the native-white group there were marked variations in the age structure, by income, and the relationship was markedly toward older age composition (within the 15–44 limits) with advancing income. For the foreign whites, however, the age curves were of the same pattern, regardless of income; at all income levels the proportions in succeeding age groups rose in straight-line fashion. With one or two exceptions, the age distribution of the colored women in different income classes conformed to the bimodal type of curve with peaks at ages 25–29 and 35–39. The wives reporting incomes of less than $1,000 or relief were in general youngest, however, and those reporting $1,500–1,999 were oldest.

In Figure 26 the data are presented to point up the differences by nativity and color in the age distributions at various income levels. At all incomes the foreign whites were oldest, but this type of contrast was most conspicuous in the lowest-income class. Colored wives reporting family incomes of $2,000 and over were a little younger than native-white wives in the $2,000–2,999 class, but the reverse was true at income levels $1,000–1,499 and $1,500–1,999.

[10] The failure of standardization for age to change the total distributions can be simply described. In the case of native whites, there was a marked association of income with age, but the actual age structure of this group was not greatly different from the age structure used for standardizing (the age distributions of all urban married women in the United States). The foreign whites, on the other hand, were characterized by an abnormal age structure, but as among the colored wives, there was little association of income with age.

Within the lowest income groups, under $1,000, the age distributions of the colored and native-white wives were

TABLE 27.—*Age distribution of wives of childbearing age in the Health Survey; by nativity, color, and family income*[1]

Nativity, Color, and Age of Wife	$5,000 and Over	$3,000–4,999	$2,000–2,999	$1,500–1,999	$1,000–1,499	Under $1,000 and Total Relief	Total Relief
Native White							
Total 15–44	100.0	99.9	99.9	100.0	100.0	100.0	*100.0*
15–19	0.5	0 6	0.7	1.1	2.0	4.6	*4.7*
20–24	6.0	6.5	8 2	11.4	16 9	20.1	*18.8*
25–29	14.4	17.4	20.7	23.3	25.3	23.4	*22.2*
30–34	21.3	22.3	23.7	23.0	21.7	19.3	*20.0*
35–39	28.3	27.1	24.7	22.6	19.2	17.7	*18.7*
40–44	29 5	26.0	21.9	18.6	14.9	14.9	*. 15.6*
Foreign White							
Total 15–44	100.0	100.0	100.1	99.9	100.1	100.0	*100.0*
15–19	0.2	0.2	0.1	0.1	0.1	0.2	*0.2*
20–24	1.7	2.8	3.3	3.5	4.1	4.1	*3.8*
25–29	10 0	12.8	12.4	13.0	13.6	11.6	*11.0*
30–34	18.5	19.4	21.8	20.7	21.5	19.9	*18.9*
35–39	33.7	26.9	27.7	29.5	28.8	30.2	*31.2*
40–44	35.9	37.9	34.8	33.1	32.0	34.0	*34.9*
Colored							
Total 15–44			100.0*	100.0	99.9	99.9	*100.0*
15–19			2.0	1.5	2.1	4.6	*4.8*
20–24			11.5	8.9	11.5	17.0	*15.6*
25–29			24.9	20.5	21.7	23.3	*21.8*
30–34			21.8	22.5	22.9	20.1	*20.1*
35–39			22.0	26.5	23.8	21.7	*22.9*
40–44			17.8	20.1	17.9	13.2	*14.8*

[1] *See* Appendix Table 8 for numerical distribution.

* The top-income class used for the colored wives is 2,000 and over. This class is virtually equivalent to the $2,000–$2,999 group for whites since only 0.5 per cent of the colored wives reporting $2,000 and over had incomes in excess of $3,000.

much the same. The difference consisted mainly in the bimodal age structure of the former group.
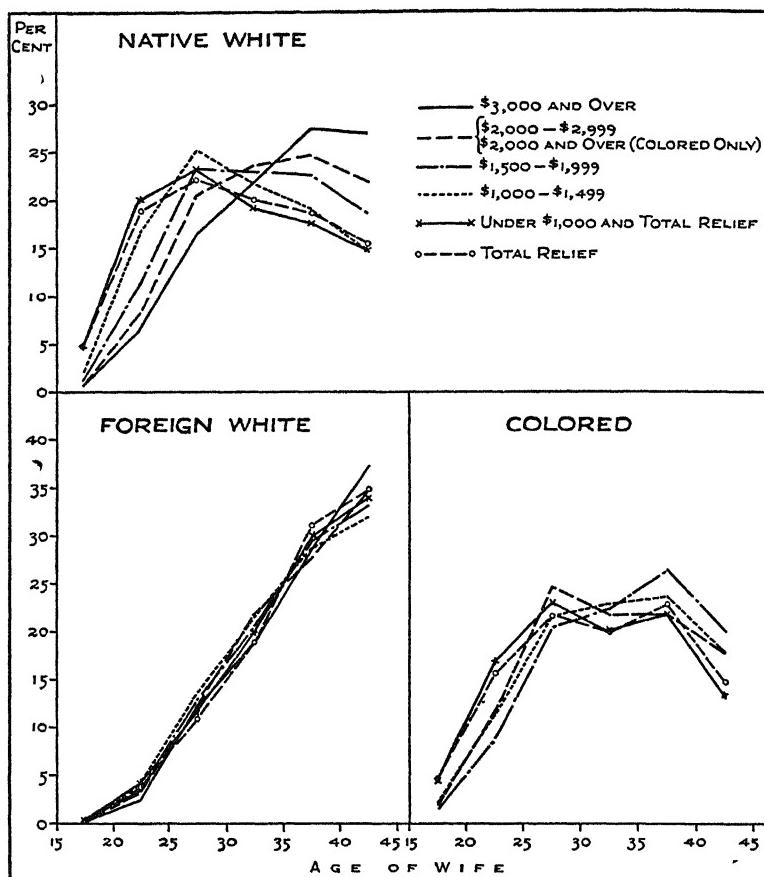
FIGURE 25.—*Age distribution of wives 15–44, by family-income status; within groupings by nativity and color*
Surveyed cities combined. *See* Table 27

STANDARDIZED RATES FOR THE TOTAL SURVEY

In Figure 27, based on Table 28, birth rates standardized for age are presented according to family-income status. The data relate to married women 15–44 years of age in the combined areas of the *Survey* and are shown separately for
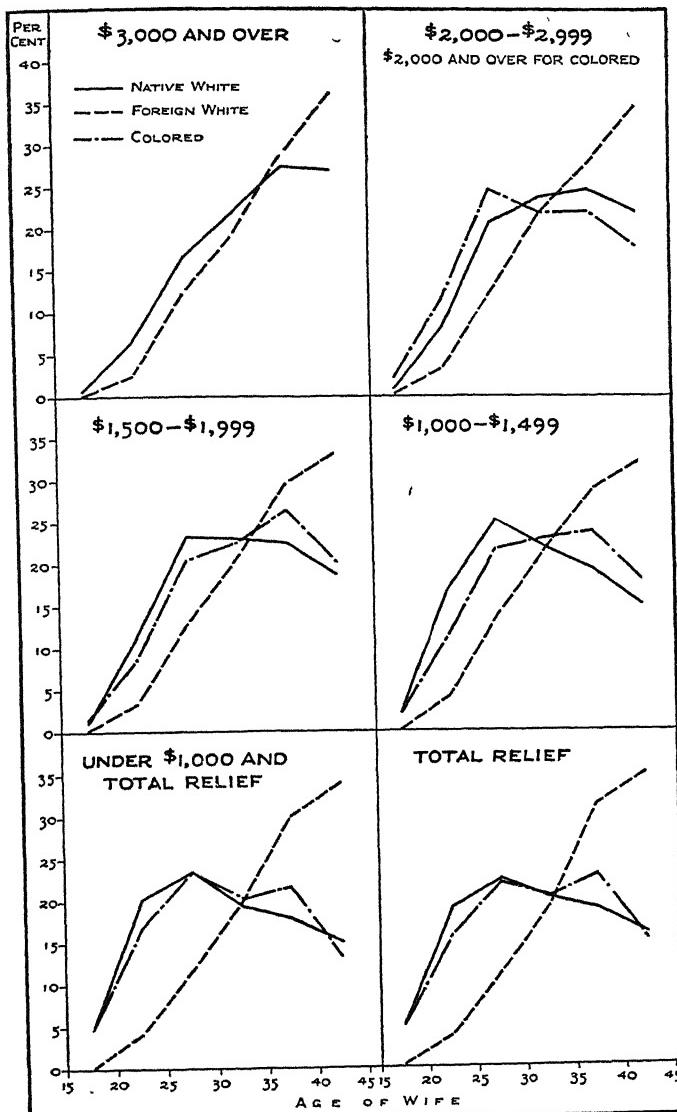
FIGURE 26.—*Age distribution of wives 15–44 by nativity and color; within groupings by family income*

Surveyed cities combined.   *See* Table 27

TABLE 28.—*Fertility rates in 1935 among wives of childbearing age in the Health Survey; by family income, nativity, and color*
Data shown in relation to income composition of the samples
Rates standardized for age

Family Income	Live Births per 1,000 Wives			Per Cent Distribution by Family Income			Number of Wives		
	White Native	Foreign	Colored	White Native	Foreign	Colored	White Native	Foreign	Colored
Total	96	111	86	100 0	100.0	100 0	284,246	51,901	39,511
$5,000 and Over	78	83*	45**	1 9	3.6*	1.9**	5,344	1,790*	738**
3,000–4,999	77			5 0			13,644		
2,000–2,999	76	90	60	13.9	10.0	3.5	38,313	5,040	
1,500–1,999	81	102	73	19.9	18.4	12.3	54,761	9,277	1,361
1,000–1,499	90	104	90	26.1	28.6	82.3	71,849	14,401	4,764
Under $1,000 and Total Relief	117	128		33.2	39.4		91,553	19,817	31,987
Nonrelief Under $1,000	*96*	*108*	*69*	*19 8*	*22.3*	*50 7*	*54,543*	*11,208*	*19,715*
Total Relief	*147*	*155*	*126*	*13 4*	*17 1*	*31 6*	*37,010*	*8,609*	*12,272*
Unknown							8,782	1,576	661

* $3,000 and over.
** $2,000 and over.

the three nativity-color groups. The top-income classes
that were feasible for this purpose were $5,000 and over for
native whites, $3,000 and over for foreign whites, and $2,000
and over for colored wives.   In this and all following analy-
ses by income, the data are shown for relief families sepa-
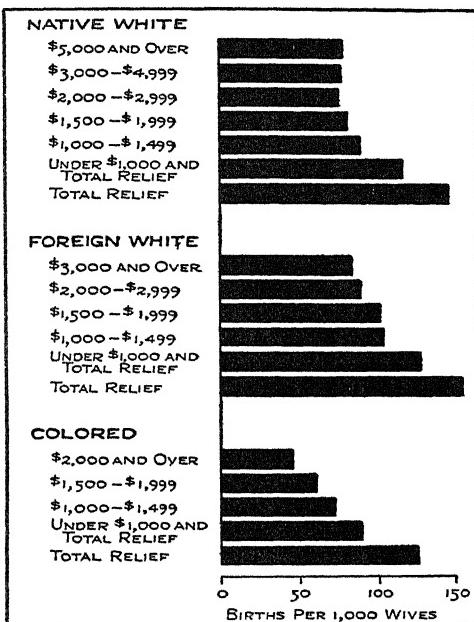
FIGURE 27.—*Family income in relation to fertility rates in 1935 among wives 15–44
years of age, by nativity and color of the wife*
Rates standardized for age and surveyed cities combined.   *See* Table 28

rately and also in combination with nonrelief families report-
ing less than $1,000.
    (a) *Native White.* As indicated in Figure 27, the com-
bined data for urban native whites yielded a general picture
of the inverse association of marital fertility rates to amount
of income, but this type of relation did not extend into the
upper-income brackets.   The marital fertility rate for fami-
lies earning $5,000 and more was no lower than that for

families with incomes of $3,000–4,999 or $2,000–2,999.[11]   As
seen from Table 28, however, these three top-income classes
collectively constituted only one-fifth of the native-white
group.   Below the $3,000 level, marital fertility rates rose
consistently with lowering of income, and 93 per cent of the
native-white wives in the sample reported incomes below
this level.   Furthermore, it appears that in the present
sample the strength of the inverse association increased with
lowering of income.[12]   The rate for the relief recipients con-

[11] As will be seen in Chapter VII, however, the inverse relation apparently still
holds in complete and strong form when general fertility or reproduction rates are
considered, because these indices are influenced by class differences in proportions
married as well as by class differences in marital fertility.

[12] The differences $\pm \sigma$ differences of birth rates between given income classes are
presented below by nativity and color.   With the reservations described on page 62
(footnote 25a), the italicized figures may be regarded as significant differences.
(Difference $> 2 \sigma$ difference.)

Classes Compared	Difference $\pm \sigma$ Difference of Birth Rates		
	Native White	Foreign White	Colored
$5,000 and Over – $3,000–4,999.	*1 ± 4.3		
$5,000 and Over – $2,000–2,999	*2 ± 3.9		
$5,000 and Over – $1,500–1,999.	3 ± 3.9		
$5,000 and Over – $1,000–1,499	12 ± 4.1		
$5,000 and Over – Under $1,000 and Total Relief... .	39 ± 4.5		
$5,000 and Over – Total Relief.	69 ± 5.1		
$3,000–4,999[a] – $2,000–2,999...	*1 ± 2.6	7 ± 7.8	
$3,000–4,999 – $1,500–1,999..	4 ± 2.6	19 ± 7.7	
$3,000–4,999 – $1,000–1,499........	13 ± 2.7	21 ± 7.6	
$3,000–4,999 – Under $1,000 and Total Relief. . .	40 ± 2.9	45 ± 8.2	
$3,000–4,999 – Total Relief	70 ± 3.4	72 ± 9.1	
$2,000–2,999[b] – $1,500–1,999.....................	5 ± 1.8	12 ± 5.2	15 ± 10.5
$2,000–2,999 – $1,000–1,499......	14 ± 1.8	14 ± 4.9	28 ± 10.1
$2,000–2,999 – Under $1,000 and Total Relief	41 ± 1.9	38 ± 5.1	45 ± 10.6
$2,000–2,999 – Total Relief	71 ± 2.3	65 ± 6.0	81 ± 12.4
$1,500–1,999 – $1,000–1,499.	9 ± 1.6	2 ± 4.0	13 ± 7.9
$1,500–1,999 – Under $1,000 and Total Relief.........	36 ± 1.7	26 ± 4.1	30 ± 7.9
$1,500–1,999 – Total Relief	66 ± 2.1	53 ± 5.0	66 ± 9.3
$1,000–1,499 – Under $1,000 and Total Relief........	27 ± 1.5	24 ± 3.5	17 ± 4.4
$1,000–1,499 – Total Relief................	57 ± 2.0	51 ± 4.5	53 ± 5.4

[a] Foreign White: $3,000 and over.

[b] Colored: $2,000 and over.

* The upper-income class of the two compared had the higher birth rate. In other cases the
opposite type of relation was observed. *See* Table 28.

sidered separately, of course, was greatly enhanced by selective factors.[13]   On a straight income basis, however, the largest difference between fertility rates for *successive* classes was that between the "$1,000–1,499" and the "Under $1,000 and Total Relief" groups.[14]   The high rate for the lowest-income group (117) is made more significant in a demographic sense by the fact that it applied to about one-third of the native-white wives in the sample.   Rates of almost precisely the same magnitude as that observed for the low-income class have previously been shown for the native-white wives of unskilled laborers and for wives reporting less than 7th grade in school attainment.   The unskilled laborers, however, included only 9 per cent and the "Under 7th Grade" group only 6 per cent in the distributions by occupation and education respectively.   This situation suggests the greater discriminative power of income than of occupation or education with respect to fertility differentials, but there are biases that should be taken into account in considering the data from this point of view.   This whole question of the association of the different variables with

[13] It is well known that during the depression indigent families with infants were more likely to apply for and to receive public aid than were low-income families without children.   The force of this selection is demonstrated by the fact that the average birth rate for nonrelief, native-white families with less than $1,000 was only 96 whereas that for the relief group considered separately was 147.   *See* Table 28.

[14] To some extent a statistical artifact may be involved in the wide disparity between the fertility rates for the two above-mentioned classes.   The enumerators in the *Survey* were not required to solicit information regarding income from relief families.   As indicated, all relief families were included in the class "Under $1,000 and Total Relief."   Of the probably small proportion of relief families that actually had incomes in excess of $1,000, most would perhaps be properly contained in the $1,000–1,499 category.   Since relief families are a select group with respect to high fertility, any erroneous transference of them from the $1,000–1,499 to the "Under $1,000" category would serve to depress the fertility rate for the former group and to increase it for the latter group.   Whatever may have been the bearing of this factor on the fertility rates for the two lowest-income classes (exclusive of the relief group considered separately), it appears highly doubtful that the rates for classes above the $1,500 level were appreciably affected by the exclusion of relief recipients.

fertility in the *Survey* data is discussed in the latter part of Chapter VI.

(b) *Foreign White*. In the combined sample of foreign-white wives 15–44 years of age, a clear-cut inverse relation of birth rates to family-income status was found (Figure 27). This extended throughout the gamut of the income classes represented. As will be seen later, however, the breakdown of the data by area and size of community did not yield consistent results of this character.

(c) *Colored*. The combined data for all colored wives in the sample are of interest in their indications that birth rates among this group were more sharply differentiated according to income status than according to occupational class of the head or educational attainment of the wife (Figure 27). Nevertheless, the proportion with family earnings above $1,500 per year was so small (5 per cent) that the fertility differentials by income have little demographic importance.

AGE-SPECIFIC RATES FOR THE TOTAL SURVEY

In Table 29 and Figure 28 age-specific fertility rates of married women are presented by income, for each of the three color-nativity groups in the total *Survey*. Within each color-nativity group, the women reporting family incomes of less than $1,000 per year were characterized by highest fertility rates throughout the childbearing span. The rates for the relief recipients, considered separately, were always highest of all.

(a) *Native White*. Among the native whites, the spread of the birth rates by income was greatest at youngest ages. In fact, aside from the persistence of relatively high birth rates among wives reporting incomes short of $1,000 per year, or relief, there were practically no variations in the birth rates by income status after age 25 or 30 (Figure 28, top section).

TABLE 29.—*Age-specific fertility rates in 1935 among wives in the Health Survey; by family income, nativity, and color*

Nativity, Color, and Age of Wife	Live Births per 1,000 Wives							
	$3,000 and Over	$5,000 and Over	$3,000-4,999	$2,000-2,999	$1,500-1,999	$1,000-1,499	Under $1,000 and Total Relief	Total Relief
Native White								
Total 15–44[1]	77	78	77	76	81	90	117	147
15–19	204	280*	182*	150	189	221	279	345
20–24	142	108	155	141	149	186	234	282
25–29	115	130	110	111	117	123	155	191
30–34	71	72	70	74	75	73	98	126
35–39	29	28	29	32	36	39	54	78
40–44	8	6	9	10	12	13	24	36
Foreign White								
Total 15–44[1]	83	66	87	90	102	104	128	155
15–19	—	—	—	—	—	—	245*	—
20–24	133*	—	135*	157	210	213	246	285
25–29	153	109*	165	141	149	154	173	197
30–34	70	71*	70	89	85	89	112	136
35–39	33	26	36	42	37	39	68	100
40–44	0	6	6	5	18	15	28	42
Colored								
Total 15–44[1]				45**	60	73	90	126
15–19				—	—	284	303	385
20–24				82*	165	158	178	247
25–29				27	61	68	100	147
30–34				31	33	62	74	107
35–39				31	25	32	45	64
40–44				0	7	15	19	25

[1] Rates shown for totals are standardized for age.

* Age-specific rates based on 25–99 cases. These were not plotted in Figures 28 and 29. *See* Appendix Table 8 for numerical distribution of wives.

** The top-income class used for the colored wives is $2,000 and over. This class is virtually equivalent to the $2,000–$2,999 group for whites since only 0.5 per cent of the colored wives reporting $2,000 and over had incomes in excess of $3,000.

Another point of interest is the indication that at no age did the rate for native-white wives reporting incomes of

$3,000 and over fall substantially below that for wives in the $2,000–2,999 category.   In fact, among wives 15–19 the fertility rate for those reporting incomes in excess of $3,000
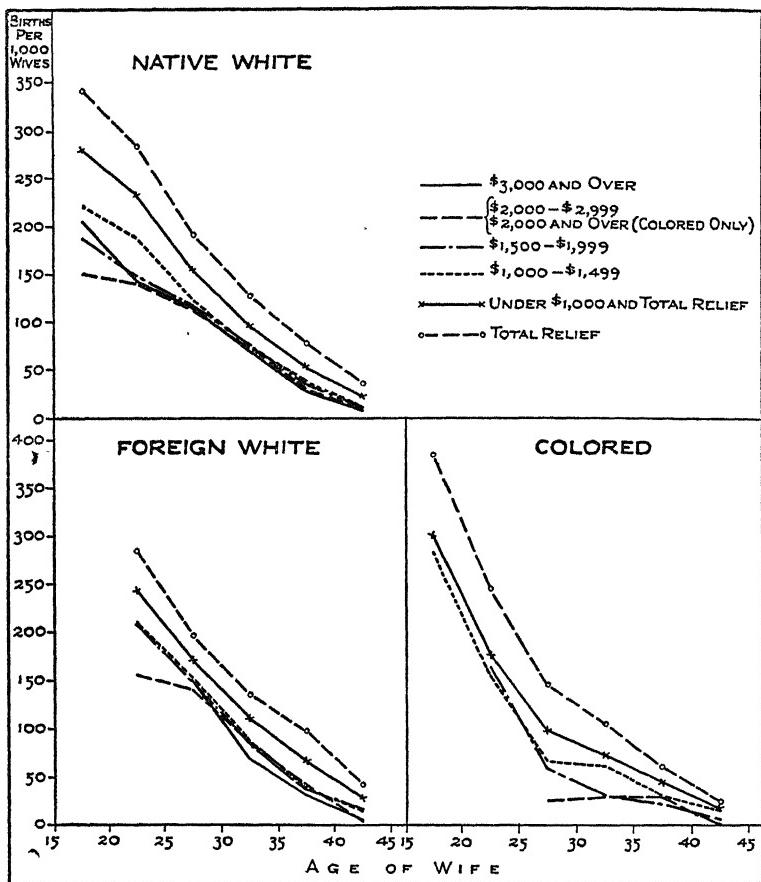

FIGURE 28.—*Age-specific fertility rates in 1935 by family income and by nativity and color of the wife*
Surveyed cities combined.   *See* Table 29

was actually higher than that for wives reporting $2,000–2,999 or $1,500–1,999.   This situation may well have arisen through chance variations, but it suggests that young wives

with family incomes in excess of $3,000 may feel less com-
pelled to postpone their initial births than do those in imme-
diately lower income groups.

(b) *Foreign White*. Among foreign-white wives, as among
the native whites, the persistence of relatively high rates
for the lowest economic classes was the chief characteristic
of the age-specific fertility according to income status
(Figure 28). With this exception there appeared to be little
variation in marital fertility rates by income status after
age 25.

(c) *Colored*. The age-specific data for colored wives
(Figure 28) suggest that differences in fertility rates by in-
come persisted into later ages to a more noticeable extent
among colored wives than among the whites. The concave
pattern of the curve of age-specific fertility appeared to char-
acterize each income group for which the data approached
adequacy. As previously stated, however, the concentra-
tion of the colored wives in the lowest economic groups de-
limits the practical importance of the fertility differentials
that do exist.

(d) *Differences by Nativity and Color*. Figure 29 brings
out the nativity-color comparisons of age-specific birth rates
of wives of similar family-income status. There is the sug-
gestion that the largest differences by nativity in age-specific
birth rates of white wives occurred within the intermediate
income ranges ($1,000–2,999) and among women 20–29 years
of age.[15] At each income level for which data were sufficient
for age-specific rates for the colored women, the Negro-white
comparisons were much the same as those previously pre-
sented for the total samples in Chapter II. At youngest
ages, 15–19, the rates for colored wives generally surpassed
those for the whites. At ages 20–24 and 25–29, however,

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[15] Due to small numbers of foreign-white married women 15–19 years of age, it
is unknown whether or not the above statement should be amended to include all
married women under 30 years of age.
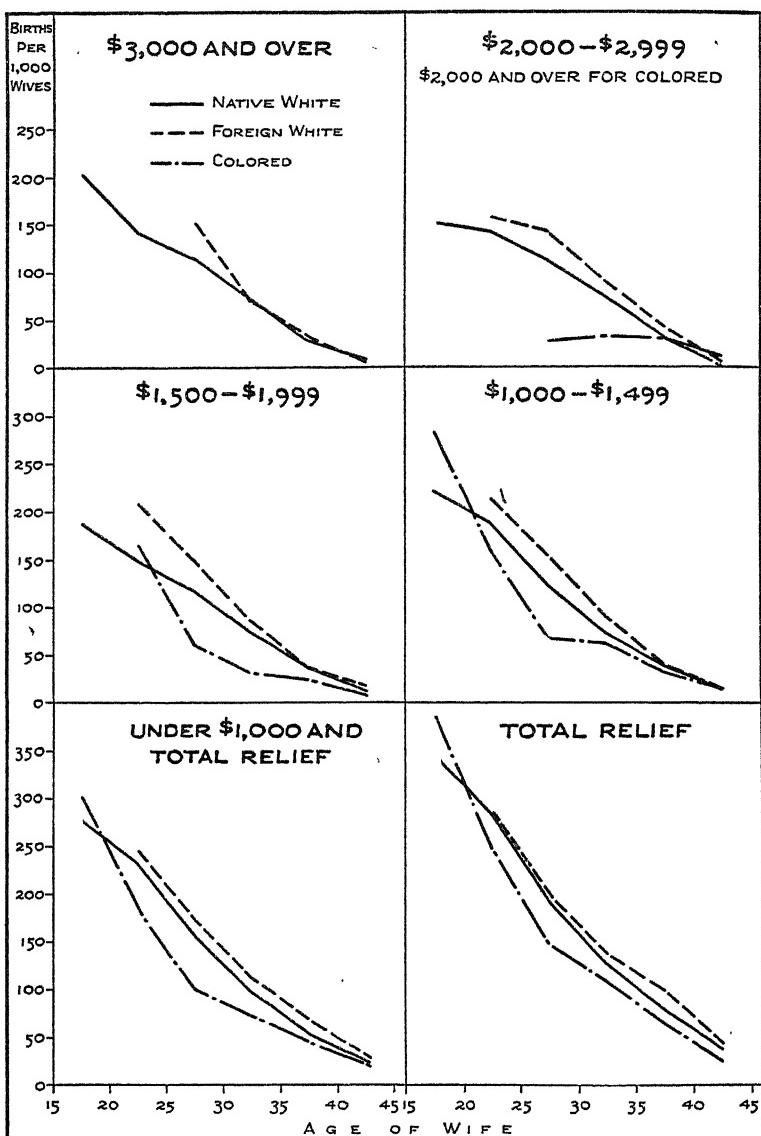
FIGURE 29.—*Comparisons by nativity and color of age-specific fertility rates for wives of similar family-income status*
Surveyed cities combined.   *See* Table 29

TABLE 30.—*Fertility rates in 1935 among native-white wives of childbearing age in the Health Survey; by family income, and by area and size of city*

Rates standardized for age

Size of City and Family Income	Live Births per 1,000 Wives					Number of Wives				
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over										
Total.						53,922	45,595			9,012
$3,000 and Over..	82	69			57	4,245	2,502			819
2,000–2,999.	85	76			65	8,151	6,387			1,420
1,500–1,999. . . .	100	77			62	11,028	9,562			1,950
1,000–1,499.	110	91			69	12,538	12,373			2,547
Under $1,000 and Total Relief.	134	109			82	15,441	12,885			2,256
Total Relief.	*157*	*137*			*112*	*7,902*	*5,101*			*819*
Unknown						2,519	1,886			20
100,000–500,000										
Total						16,706	26,573	28,855	3,735	14,560
$3,000 and Over..	79	107	50	134*	78	1,292	1,705	2,590	253	1,226
2,000–2,999.. . . .	74	69	61	103	72	2,591	3,166	4,296	526	2,424
1,500–1,999.. . .	86	82	66	76	71	3,305	4,925	5,657	700	3,287
1,000–1,499.	98	96	59	117	86	4,054	7,041	7,161	869	3,290
Under $1,000 and Total Relief.	139	124	94	159	94	5,252	8,953	8,166	1,325	4,106
Total Relief.	*163*	*148*	*125*	*170*	*121*	*2,690*	*4,119*	*2,446*	*604*	*1,758*
Unknown.						212	783	985	62	227
25,000–100,000										
Total.						7,810	17,712	17,984		3,420
$3,000 and Over.	98	111	65		45*	313	592	1,578		177
2,000–2,999.. . .	94	77	73		86	771	1,566	2,344		423
1,500–1,999.. . . .	95	81¯	61		62	1,298	2,946	3,216		620
1,000–1,499.	95	85	78		70	2,104	5,002	4,318		914
Under $1,000 and Total Relief.	139	114	106		87	3,121	7,301	6,081		1,236
Total Relief.	*174*	*155*	*136*		*103*	*1,335*	*2,579*	*1,909*		*499*
Unknown.						203	305	447		50

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

TABLE 30.—*Concluded*

Size of City and Family Income	Live Births per 1,000 Wives					Number of Wives				
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific
Under 25,000										
Total...						9,781	9,813	8,332	1,432	9,004
$3,000 and Over.	65	79*	96	—	76	448	292	362	25	569
2,000–2,999. .. .	91	78	78	—	73	961	859	654	70	1,704
1,500–1,999.	100	98	73	123*	83	1,686	1,333	1,045	155	2,048
1,000–1,499......	101	106	85	114	75	2,505	2,328	2,086	457	2,262
Under $1,000 and Total Relief	131	128	107	134	103	3,730	4,704	3,952	718	2,326
Total Relief....	*155*	*176*	*147*	*156*	*139*	*1,588*	*1,613*	*879*	*313*	*856*
Unknown.......						451	297	233	7	95

the rates for colored wives fell well below those for the whites. After age 35 there was little difference by color in the magnitude of the rates.

STANDARDIZED RATES BY AREA AND SIZE OF CITY

(a) *Native White.* The failure of the inverse relation between marital fertility rates and amount of income to extend into upper-income classes of native whites, appears to be generally substantiated in the data by region and size of city, Table 30, Figure 30. With one or two exceptions the birth rates among wives reporting family incomes of $3,000[16] and over were about as high as, or higher than, those for wives reporting family incomes of $2,000–2,999. In some instances, there was a virtual absence of the inverse association between marital fertility rates and income among families reporting more than $1,500 per year. Despite the exceptions, however, the inverse relation is the predominant

[16] For the breakdown by area and size of city "$3,000 and Over" was used as the top-income class for whites and "$1,000 and Over" for the colored.
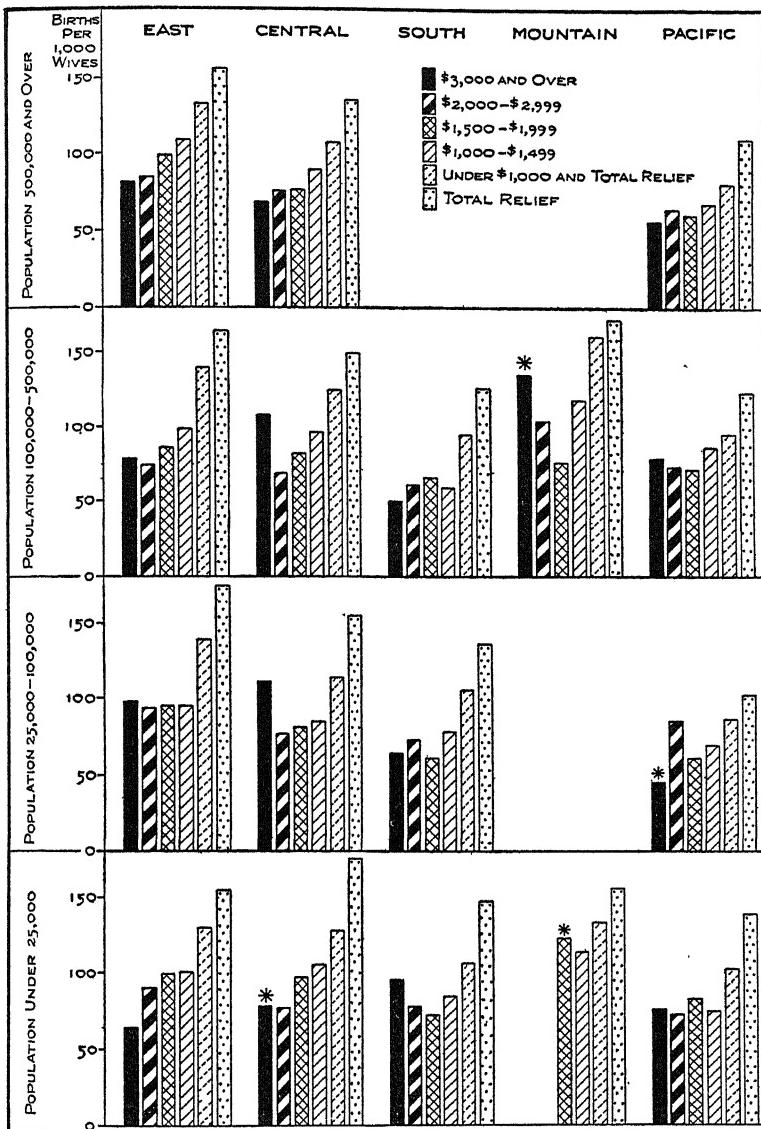
FIGURE 30.—*Family income in relation to fertility rates in 1935 among native-white wives 15–44 years of age, by area and size of surveyed cities*

Rates standardized for age. *See* Table 30.

* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

impression yielded by the area-size data in Figure 30 and also by the separate data for large cities presented in Figure 31 (based on Table 31).   In all cases the poorest families were characterized by highest birth rates.

TABLE 31.—*Fertility rates in 1935 among native-white wives of childbearing age in specified cities of the Health Survey, by family income*

Rates standardized for age

City	Live Births per 1,000 Wives					
	$3,000 and Over	$2,000– 2,999	$1,500– 1,999	$1,000– 1,499	Under $1,000 and Total Relief	Total Relief
Boston	89	90	108	128	160	*181*
Buffalo	84	80	115	111	140	*163*
New York	78	87	94	105	132	*152*
Philadelphia	80	64	87	100	124	*150*
Pittsburgh	81	89	102	109	123	*140*
Chicago	76	86	81	93	111	*125*
Cleveland	51	53	68	90	106	*135*
Detroit	71	88	92	100	123	*175*
St. Louis	53	56	57	81	102	*131*
Los Angeles	57	65	62	69	82	*112*
	Number of Wives					
Boston	560	1,383	1,805	2,047	2,221	*1,314*
Buffalo	723	1,348	2,034	2,410	3,176	*1,818*
New York	1,756	3,072	3,545	2,962	3,318	*1,755*
Philadelphia	733	1,546	2,344	3,112	3,298	*1,451*
Pittsburgh	473	802	1,300	2,007	3,428	*1,564*
Chicago	1,230	2,628	3,490	3,603	3,637	*1,423*
Cleveland	321	1,158	2,139	3,363	4,317	*2,001*
Detroit	615	1,486	2,016	2,490	1,845	*699*
St. Louis	336	1,115	1,917	2,917	3,086	*978*
Los Angeles	819	1,420	1,950	2,547	2,256	*819*

The fertility differentials by income were not so pronounced in the Pacific Coast samples as in samples drawn from other areas.   It is of interest to point out, however, that in the Pacific Coast data the inverse relation on the

basis of income appeared to be more generally manifested than that previously observed on the basis of occupational or educational class (*cf.* Figures 10, 20, and 30). This sug-
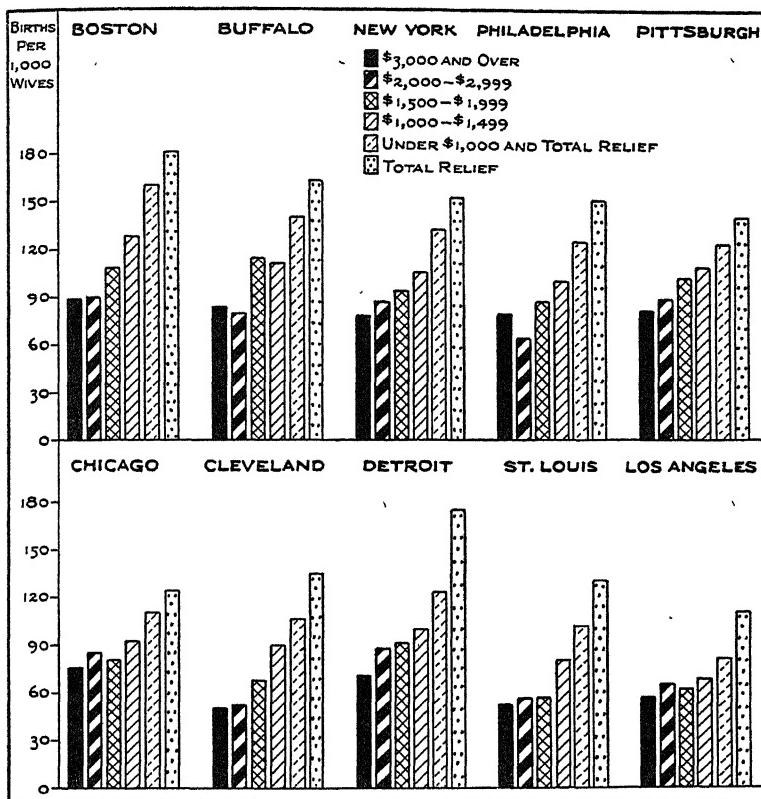
FIGURE 31.—*Family income in relation to fertility rates in 1935 among native-white wives 15–44 years of age enumerated in specified cities of the "Survey"*
Rates standardized for age. *See* Table 31

gests that in these data the fertility rates were more sensitive to income than to occupational status, a matter discussed more fully in the latter part of Chapter VI.

(b) *Foreign White.* The available fertility rates for

TABLE 32.—*Fertility rates in 1935 among foreign-white wives 25–44 years of age in the Health Survey; by family income, and by area and size of city*

Rates standardized for age

Size of City and Family Income	Live Births Per 1,000 Wives					Number of Wives				
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over										
Total..						20,783	13,095			1,120
$3,000 and Over... ...	59	78			—	836	308			82
2,000–2,999	75	64			51*	2,200	1,088			144
1,500–1,999.	77	85			45*	3,924	2,257			229
1,000–1,499	92	57			66	5,539	3,892			332
Under $1,000 and Total Relief	110	83			68	7,567	5,074			328
Total Relief..	*132*	*110*			*97*	*3,583*	*2,090*			*111*
Unknown						717	476			5
100,000–500,000										
Total						5,171	2,139	573	325	1,803
$3,000 and Over......	65*	—	—	—	—	165	67	60	14	79
2,000–2,999....	67	85*	—	—	70*	454	184	85	29	250
1,500–1,999.... ...	71	37	61*	—	57	889	353	110	57	398
1,000–1,499........	67	77	59*	—	74	1,463	627	134	86	461
Under $1,000 and Total Relief.......	103	88	68*	155*	64	2,163	837	162	132	584
Total Relief..........	*106*	*128*	—	—	*64**	*1,000*	*324*	*29*	*51*	*215*
Unknown...........						37	71	22	7	31
25,000–100,000										
Total						1,304	663	152		131
$1,500 and Over.... .	42*	99*	—		—	275	201	68		47
1,000–1,499...	86	125*	—		—	351	205	36		33
Under $1,000 and Total Relief	91	143*	—		—	643	233	39		50
Total Relief..	*94*	—	—		—	*307*	*94*	*6*		*16*
Unknown...........						35	24	9		1
Under 25,000										
Total...................						1,338	466	52	87	596
$1,500 and Over......	75	—	—	—	50*	310	75	15	10	286
1,000–1,499..........	70	58*	—	—	48*	352	111	13	27	144
Under $1,000 and Total Relief	107	93*	—	—	76*	639	270	22	50	159
Total Relief	*154**	—	—	—	—	*282*	*89*	*4*	*17*	*45*
Unknown...........						37	10	2	—	7

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

foreign-white married women, 25–44 years of age,[17] are shown
in Figure 32 (based on Table 32) for surveyed cities of
100,000 population or over in Eastern, Central, and Pacific
regions. For the groups represented here the inverse asso-
ciation of marital fertility rates with family income was most
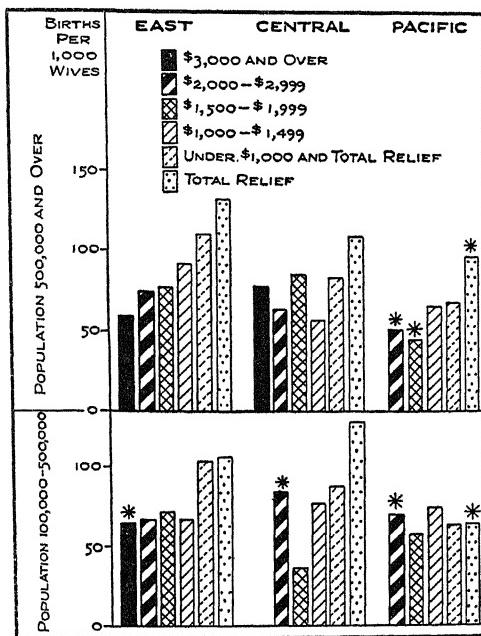
FIGURE 32.—*Family income in relation to fertility rates in 1935 among foreign-white
wives 25–44 years of age in selected groups of surveyed cities*
Rates standardized for age. *See* Table 32.
* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

sharply in evidence in the surveyed Eastern cities of 500,000
population or more, and least manifested in Pacific cities with
100,000–500,000 inhabitants. The numbers of foreign
whites involved in area-size groups exhibiting the inverse

[17] Due to the small number of foreign-white wives under 25 years of age the
classifications by area and size of city were restricted to women 25–44. Also, the
charts for foreign-white and colored wives were necessarily restricted to area-size
groups in which those elements of our population were sufficiently represented in
the sample to warrant an analysis of fertility rates by income.

TABLE 33.—*Fertility rates in 1935 among colored wives of childbearing age in the Health Survey; by family income, and by area and size of city*
Rates standardized for age

Size of City and Family Income	Live Births per 1,000 Wives				Number of Wives				
	East	Central	South	Pacific	East	Central	South	Mountain	Pacific
500,000 and Over									
Total......					5,800	6,398			1,846
$1,000 and Over	50	68		109	1,639	1,798			580
Under $1,000 and Total Relief	107	101		172	4,032	4,389			1,263
Total Relief	*129*	*124*		*212*	*2,341*	*2,457*			*653*
Unknown					129	211			3
100,000–500,000									
Total.					1,339	1,489	12,337	33	333
$1,000 and Over	85	75*	55	108*	338	231	1,288	6	152
Under $1,000 and Total Relief	103	88	77	98*	991	1,236	10,893	27	179
Total Relief	*116*	*108*	*119*	—	*702*	*735*	*3,142*	*17*	*62*
Unknown					10	22	156	—	2
25,000–100,000									
Total					73	593	5,268		7
$1,000 and Over.	—	—	69	—	18	73	366		1
Under $1,000 and Total Relief...............	—	123	68	—	50	508	4,861		6
Total Relief......	—	*112**	*120*	—	*27*	*249*	*1,105*		*2*
Unknown.					5	12	41		—
Under 25,000									
Total.					416	142	3,201	35	201
$1,000 and Over..	—	—	60*	55*	84	16	134	16	123
Under $1,000 and Total Relief..	92	164*	88	—	320	123	3,017	18	74
Total Relief	*90**	—	*103*	—	*179*	*47*	*510*	*12*	*32*
Unknown..............					12	3	50	1	4

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

relation were sufficient to dominate the average results previously presented for foreign-white wives in the total *Survey*, Figure 27.
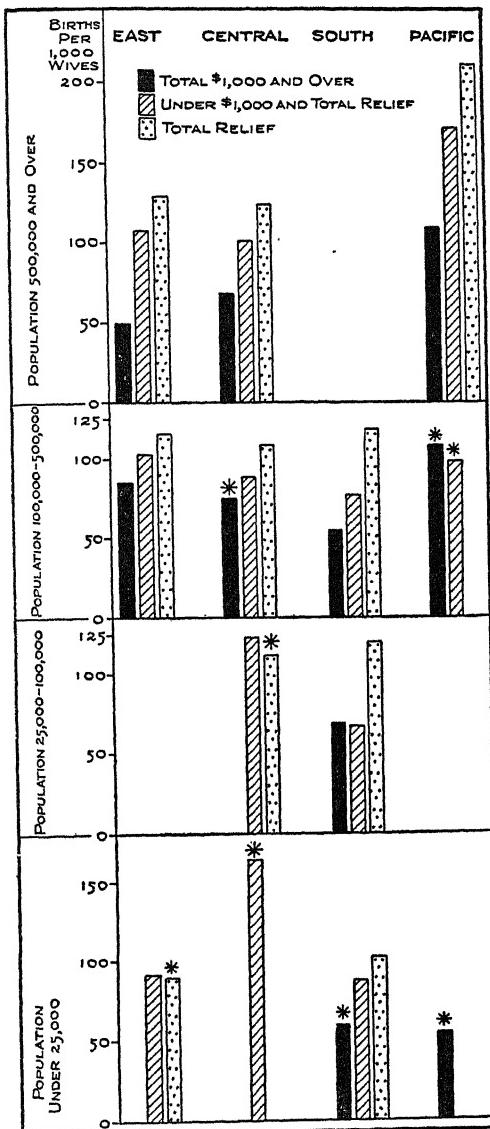
FIGURE 33.—*Family income in relation to fertility rates in 1935 among colored wives 15–44 years of age, by area and size of surveyed cities*

Rates standardized for age.   *See* Table 33.
* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

(c) *Colored*.   In the classification of colored wives by area and size of city it was feasible to have only three income groups, "$1,000 and Over," "Under $1,000 and Total Relief," and "Total Relief," Table 33, Figure 33.   Marital fertility rates among colored women reporting family incomes of $1,000 and over were fairly consistently lower than those for wives reporting under $1,000.   As expected, highest rates generally characterized the relief recipients considered separately.   Within the narrow limits of income stratification represented in the *Survey*, therefore, the inverse relation of family income to marital fertility of urban colored populations was clearly apparent.

Conspicuous in Figure 33 are the high rates for colored wives in Los Angeles, the only Pacific Coast city of 500,000 and over in the *Survey*.   As previously stated, this portion of the sample was heavily weighted by Mexican and Oriental families.   There were too few colored wives of childbearing age in Pacific cities of smaller size to yield reliable fertility rates by income.

SUMMARY

With respect to distributions by family income, the native-white wives of childbearing age stood in most favorable position and the colored wives were by far the least privileged.   Wives 15–44 reporting family incomes of less than $1,000 or relief during 1935 constituted 33 per cent of the native-white group, 39 per cent of the foreign-white, and 82 per cent of the colored.

Among the native whites there was a fairly marked tendency for income status to improve with advancing age but this situation was only partially apparent for the foreign whites and only slightly in evidence for the colored.   In interpreting these relationships, it is necessary to remember that the age data are cross-sectional and not longitudinal. In each nativity-color group the relation of income to age

agreed with that of occupational status to age, but not with
the relation of educational attainment to age. The tendency
for older wives to be less educated than younger wives was
much stronger among foreign-white and colored groups than
among the native whites. In the case of foreign whites,
selective factors inherent in age at immigration were possibly
involved but, whatever the cause, the inverse relation be-
tween age and educational status was sufficiently strong to
conceal in these cross-sectional data any positive association
of age and occupational or income status. In the case of
the colored wives the indication of only slight improvement
of income status with advancing age is due not only to the
particularly low educational level of the older wives but also
to the drawing of the color line in occupational opportunities
at all ages.

The differences by nativity and color in the relation of age
to income were also shown in the age-distribution of wives
in each income group. Among native whites those in high-
est-income groups were distinctly oldest, and the lowest-
income groups were distinctly youngest. This type of
relation was observed only to a limited extent among the
colored wives, and it was virtually non-existent among the
foreign-white wives.

Within each nativity-color group in the *Survey* there was
a broad inverse association of income and marital fertility
rates, but important qualifications should be kept in mind.
Among native whites, the inverse association did not extend
into the upper-income brackets. This held true in the
standardized rates for the combined sample and was the
usual finding for subdivisions by area and size of city, and
for specific large cities considered separately. Variations in
fertility with income were greatest at youngest ages, and
apart from the highest rates for wives reporting under $1,000
or relief, there were only minor variations after age 25 or 30.

Due to inadequacies of the data it is difficult to make gen-

eralizations regarding marital fertility rates of the foreign born in relation to income status. In the combined sample of wives 15–44, the standardized rates consistently decreased with rising income. In the analysis by area and size of city, the consistent inverse relation was found only for the large Eastern cities. The area-size analyses for foreign whites, however, were of necessity limited to wives 25–44. That such restriction would tend to reduce variations in birth rates by income status was evident from the analysis of age-specific rates for the combined sample. Among the foreign whites, as among the native whites, there was not much variation in fertility rates by income after age 25, except for the high rate for the very poorest groups. Whatever the situation may be, it should be remembered that foreign whites of childbearing age are rapidly passing out of the national demographic picture.

The heavy concentration of colored wives in the lowest-income group, under $1,000 or relief, delimited the opportunity to analyze birth rates in relation to income. In the combined sample, using $2,000 and over as a top-income class, there was a strikingly sharp inverse relation between income and fertility; a marked contrast to the situation with respect to occupation or education. Furthermore, the age-specific rates indicated a greater degree of persistence of the inverse relation into older ages than was true for the white wives. Nevertheless, the actual importance of this situation is minimized by the small proportion of colored families outside the low-income categories.

CHAPTER VI

MARITAL FERTILITY AMONG NATIVE WHITES CROSS-CLASSIFIED BY SOCIO-ECONOMIC ATTRIBUTES

IN THE three preceding chapters marital fertility rates were respectively presented in relation to occupational status of the head, educational attainment of the wife, and family income. Although three attributes were successively used, each analysis was based on a one-way classification of the data along socio-economic lines. This procedure is in line with past studies of differential fertility, but the conventional approach has been dictated by the character of data available. It has long been realized that classifications based upon a single attribute result in fairly wide differences in the economic and cultural levels of families within a given class. The lack of internal similarity with respect to standards of living and the like would presumably be especially pronounced within a broad class. In the present study the "business" class, for instance, comprised 37 per cent of the native whites in the sample and it included agents, salesmen, clerks, and owners of small stores, as well as more affluent proprietors and business people.

It is not surprising, therefore, that there has been increasing emphasis on the need for studies of variations in fertility *within* as well as *between* broad socio-economic groups. A thorough approach to the problem would necessitate sociological and psychological studies of families, and some beginning along this line has been made. In the meantime, a simpler but important approach is afforded through the

145

cross-classifications of data collected in the National Health Survey.   Analyses of a kindred nature have been made from Swedish data,[1] but domestic studies of this character have thus far been few and limited.[2]   With information collected by the 1940 Census, comprehensive studies of this type should eventually be available for the entire country.

The tabulations of fertility data for married women in the National Health Survey permitted one cross-classification by occupation of the head and education of the wife, and one by occupation of the head and amount of family income during the *Survey* year.   Mechanically, this was done by tabulating each of the four broad occupational classes by educational attainment of the wife and retabulating them by income.   This process was carried out for married women of childbearing age in each color-nativity group, but the data for foreign-white and colored wives were found to be inadequate.   This analysis, therefore, is restricted to surveyed native-white urban wives 15–44 years of age, of whom there were 284,246.

DISTRIBUTIONS OF THE SAMPLE

It may be of interest briefly to consider the *distributions* of the sample along cross-classified lines.[3]   The cross-classification by occupational class of the head and by educational attainment of the wife is presented in the bottom section of

[1] Edin and Hutchinson, 1935.
See also data in *Population Index*, January, 1940, pp. 72–73.
[2] For suggestive results based upon small samples from private investigations, *see* Notestein and Kiser, 1935.
Griffin and Perrott, 1937.
For an intensive analysis based upon 1930 Census data for Butler County, Ohio, *see* Thompson *et al.*, 1941.
[3] In considering these distributions it should be kept in mind that occupational class pertains to the "usual" type of work of the head of the household, educational attainment relates to the school attendance of the wife, and family income relates to combined incomes of members of the family during the year preceding the *Survey* —roughly the calendar year 1935.

Table 34. In the top section, the percentage distribution
by educational attainment is shown for each occupational
class. These data are plotted on the horizontal axis of

TABLE 34.—*Cross-classification of native-white wives of childbearing age in the
Health Survey; by their educational attainment, and by occupational class of
the head*

Educational Attainment of the Wife	Occupational Class of the Head					
	Total	Pro-fessional	Business	Skilled and Semi-skilled	Un-skilled	Other and Un-known
	Per Cent Distribution by Education Within Occupational Groups					
Total..	100.0	100.0	100.0	100.0	100.0	
College	11.6	40.4	17.2	4.6	2.9	
High School	52.9	49.5	61.0	49.2	41.4	
7th–8th Grades	29.5	9.2	19.5	38.2	41.9	
Under 7th Grade	6.0	0.9	2.3	8.0	13.8	
	Per Cent Distribution by Occupation Within Educational Groups					
Total.....	100.0	6.7	37.4	47.4	8.5	
College	100.0	23.5	55.5	18.9	2.1	
High School......	100.0	6.3	43.0	44.0	6.7	
7th–8th Grades........	99.9	2.1	24.6	61.2	12.0	
Under 7th Grade	100.0	1.1	14.8	64.3	19.8	
	Number of Wives					
Total.	284,246	18,494	102,754	130,306	23,376	9,316
College	32,847	7,470	17,661	6,003	679	1,034
High School	150,365	9,152	62,610	64,009	9,672	4,922
7th–8th Grades	83,833	1,693	20,020	49,743	9,777	2,600
Under 7th Grade...	17,013	171	2,408	10,468	3,225	741
Unknown......	188	8	55	83	23	19

Figure 34. Instead of portraying the occupational classes
by bars of equal height, however, a vertical percentage scale
was used for indicating the importance of each occupational
class within the total sample. This use of two-dimensional
percentage scales permits a visualization of the educational

composition of each occupational class, in relation to the importance of the occupational class in the total sample.   In Figure 35, the procedure is reversed and the percentage distribution by occupational class of the head is shown for each
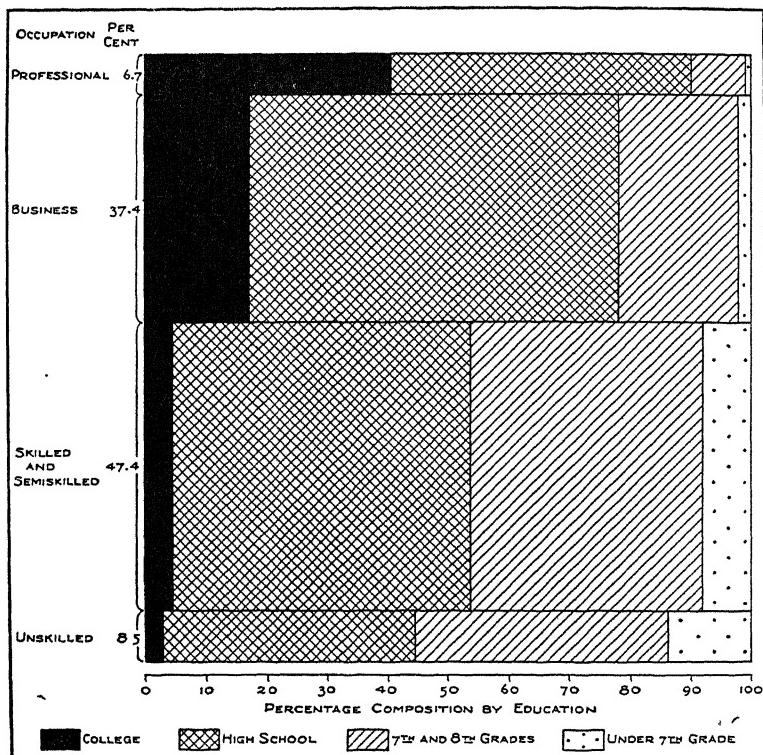

FIGURE 34.—*Educational composition of each occupational class shown in relation to proportionate importance of occupational classes.   Native-white wives 15–44 years of age in the Health Survey*
See Table 34

educational class, in relation to the proportionate importance of the educational class in the total sample.

In either Figure 34 or Figure 35, the area occupied by a given occupational-educational cell is indicative of its pro-

portionate importance in the total sample.[4]   The high school
and 7th–8th grade wives of business and skilled husbands
are seen to be the important segments of the sample.
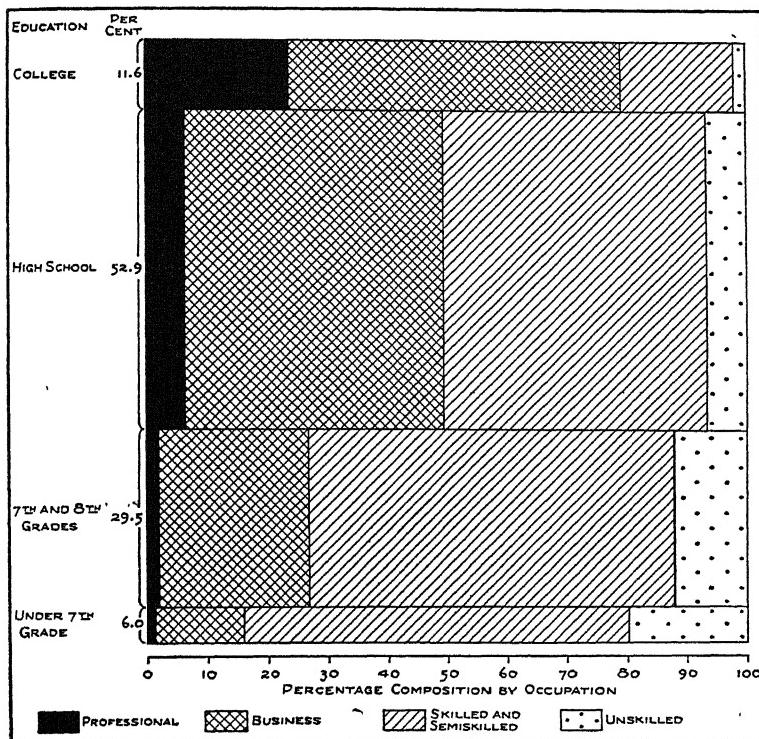
FIGURE 35.—*Occupational composition of each educational class shown in relation to
proportionate importance of educational classes.   Native-white wives 15–44 years
of age in the Health Survey*
See Table 34

   With regard to the association of the two variables con-
sidered, Figure 34 brings out the expected lowering of the

[4] In the two charts equivalent areas are occupied by a given occupational or
educational class, or by a given subdivision of either.   For instance, the area of the
total bar representing the professional class in Figure 34 is equivalent to the com-
bined area represented in the legend for the professional class in Figure 35.

wife's educational status with lowering of the occupational class of the head.   This may be illustrated by the proportion of each occupational group reporting the highest and lowest amounts of formal schooling.   Thus, college attendance was reported by 40 per cent of the professional group, 17 per cent of the business group, 5 per cent of the skilled and semiskilled group, and 3 per cent of the unskilled group.   On the other hand, the proportion with "Under 7th Grade" attainment was less than 1 per cent for the professional class, 2 per cent for the business class, 8 per cent for the skilled and semiskilled, and 14 per cent for the unskilled laborers.   The proportion of wives failing to reach high school extended from 10 per cent of the wives of professional men to 56 per cent of the wives of unskilled workers.

The converse situation, lowering of occupational status of the head with lowering of educational attainment of the wife, is brought out in Figure 35.   Nearly one-fourth of the wives with college training fell into the professional class, but only 1 per cent of the wives reporting less than 7th grade attainment were so classified.   On the other hand, 2 per cent of the college wives and 20 per cent of the "Under 7th Grade" wives were in families of "unskilled" status.

The cross-classifications by occupation and income are presented in Table 35 and Figures 36 and 37.   Figure 36 presents the income composition of each occupational class, in relation to the importance of the occupational class. Figure 37 shows the occupational composition of each income class, in relation to the importance of the income class.   The business and skilled families of low and middle-income status are seen to be the important segments of the sample.

Figure 36 gives some indication of the extent of the positive association between occupational status and amount of family income within this sample.   For instance, family incomes of $3,000 and over were reported by 24 per cent of the wives of professional men and by less than 1 per cent of

TABLE 35.—*Cross-classification of native-white wives of childbearing age in the Health Survey; by family income, and by occupational class of the head*

Family Income	Occupational Class of the Head					
	Total	Profes-sional	Business	Skilled and Semi-skilled	Unskilled	Other and Un-known
	Per Cent Distribution by Income Within Occupational Groups					
Total	100.0	100.0	100.0	100.0	100.0	
$3,000 and Over.....	6.9	24.2	11.8	1.8	0.7	
2,000–2,999..	13.9	28.2	21.0	8.6	3.1	
1,500–1,999..	19.9	21.3	24.8	18.2	9.1	
1,000–1,499..	26.1	14.2	24.1	30.0	24.3	
Under $1,000 and Total Re-lief................	33.2	12.1	18.3	41.4	62.8	
Total Relief...............	*13.4*	*4.6*	*5.3*	*17.2*	*30.0*	
	Per Cent Distribution by Occupation Within Income Groups					
Total	100.0	6.7	37.4	47.4	8.5	
$3,000 and Over.....	100.0	23.3	63.3	12.6	0.8	
2,000–2,999.......	100.0	13.3	55.6	29.2	1.9	
1,500–1,999..	99.9	7.0	45.8	43.2	3.9	
1,000–1,499.....	100.0	3.6	33.9	54.5	8.0	
Under $1,000 and Total Re-lief......	100.0	2.4	20.7	60.4	16.5	
Total Relief.....	*100.0*	*2.3*	*15.1*	*62.8*	*19.8*	
	Number of Wives					
Total......	284,246	18,494	102,754	130,306	23,376	9,316
$3,000 and Over..	18,988	4,282	11,632	2,313	152	609
2,000–2,999.......	38,313	4,985	20,777	10,911	717	923
1,500–1,999..... . . .	54,761	3,771	24,529	23,135	2,093	1,233
1,000–1,499..	71,849	2,513	23,791	38,218	5,582	1,745
Under $1,000 and Total Re-lief.	91,553	2,138	18,043	52,683	14,424	4,265
Total Relief.......	*37,010*	*815*	*5,250*	*21,844*	*6,891*	*2,210*
Unknown	8,782	805	3,982	3,046	408	541

the wives of unskilled laborers. At the other extreme, family incomes of less than $1,000 or relief status were reported by 12 per cent of the wives of professional men and

by 63 per cent of the wives of unskilled laborers.   The relief
recipients, considered separately, constituted 5 per cent of
the professional and business groups, 17 per cent of the
skilled workers, and 30 per cent of the unskilled laborers.
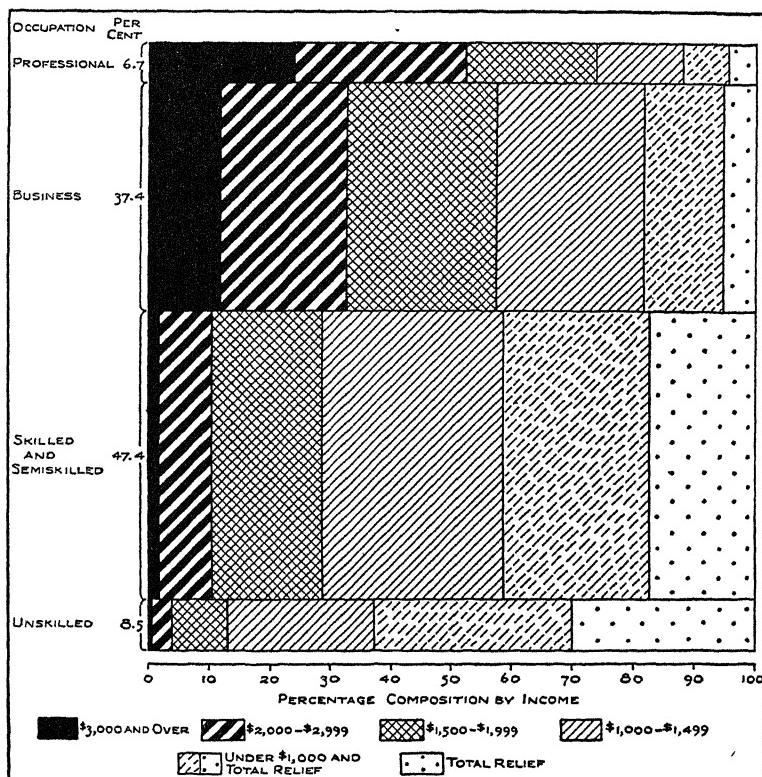
FIGURE 36.—*Income composition of each occupational class shown in relation to
proportionate importance of occupational classes.   Native-white wives 15–44 years
of age in the Health Survey*
See Table 35

The sharp positive association is also emphasized in Figure
37, which shows a systematic change in occupational com-
position of income classes as one passes from high to low-
income groups.   Among families reporting incomes of $3,000

and over, 23 per cent were of professional status and 87 per cent fell into the total "white-collar" class. Less than 1 per cent were unskilled. Among families with incomes of less than $1,000, 2 per cent were of professional rank, and
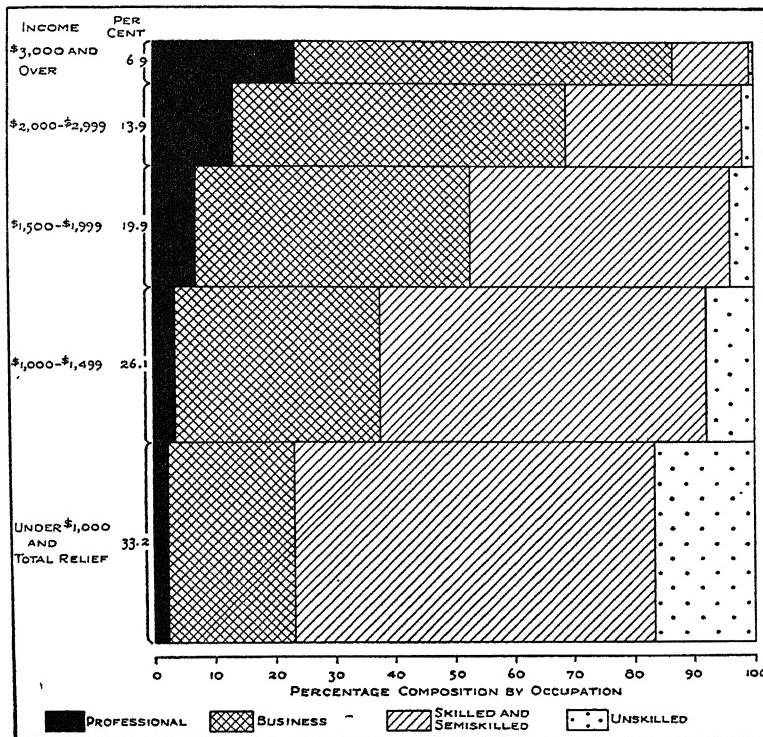

FIGURE 37.—*Occupational composition of each income class shown in relation to proportionate importance of income classes. Native-white wives 15–44 years of age in the Health Survey*
See Table 35

only 23 per cent were in the "white-collar" class. Over three-fourths were in laboring classes and 17 per cent belonged to the unskilled group.

The foregoing cross-classifications have given a concrete demonstration of the interrelation of different criteria of

socio-economic status. The cross-classification by occupational class of the head and educational attainment of the wife suggested the influence of selective marriage. That by occupational class of the head and family income has perhaps contributed something in the way of quantitative description of a familiar type of relationship.

It is the positive association of different criteria of socio-economic status that has sanctioned the use of a single attribute for studies of class differences in fertility. Nevertheless, the fact that any group broadly similar with respect to one characteristic exhibits a range of variation with respect to another attribute, points to the necessity of studying intra-group differences in fertility. It should be emphasized at the outset, however, that complete constancy of one factor is not attained in these intra-group analyses. For instance, in the subdivision of the business class according to educational status of the wife, the college class is undoubtedly selective with regard to "upper" business pursuits, whereas the lower educational groups are disproportionately weighted by "petty" business families. Thus, we can speak only in approximate terms regarding "constancy" or "similarity" with respect to given characteristics.

Intra-Group Differences in Marital Fertility

Attention may now be turned to the marital fertility rates for the different subdivisions of socio-economic classes considered above. The data relate to births per 1,000 wives during 1935, among the surveyed urban native-white married women of childbearing age and of given occupational-educational or occupational-income characteristics. The rates were standardized for age with the method described on page 29. To present the material the following situations will be considered:

(a) Variations in marital fertility rates by educational status, within occupational groups;

(b) Variations in marital fertility rates by occupational status, within educational groups;

(c) Variations in marital fertility rates by income status, within occupational groups;

(d) Variations in marital fertility rates by occupational status, within income groups.

TABLE 36.—*Fertility rates in 1935 and their relative variations by educational attainment of the wife within groupings by occupational class of the head. Native-white wives of childbearing age in the Health Survey*

Rates standardized for age

Educational Attainment of the Wife	Live Births Per 1,000 Wives				
	All Occupations	Profes-sional	Business	Skilled and Semi-skilled	Unskilled
Total (Base Rate[1])...	96	93	87	99	110
College.	87	91	83	89	101
High School..	91	92	84	96	104
7th–8th Grades..	105	94	94	105	121
Under 7th Grade	118	103*	96	115	138
	Relative Variations (Base Rates Expressed as 100)				
Total (Base Rate)	100	100	100	100	100
College	90	98	95	90	92
High School...	95	99	96	97	94
7th–8th Grades...	109	102	107	106	109
Under 7th Grade.	122	111*	110	116	125

[1] Base rates for specific occupational classes were standardized for differences in composition by education.   *See* p. 157, footnote 5.
   * Rate based on 171 wives.   For numerical distribution *see* Table 34.

Following this presentation the collective data will be considered from the standpoint of relative importance of factors associated with fertility.

(a) *Variations in Marital Fertility Rates by Educational Status, Within Occupational Groups*.   In the top panel of Figure 38 (based on Table 36) birth rates of married women are shown according to educational status within each of

the four broad occupational classes. Within three of the occupational classes there was virtually no difference between the birth rate for wives reporting college attendance and that for wives reporting high school status. Aside
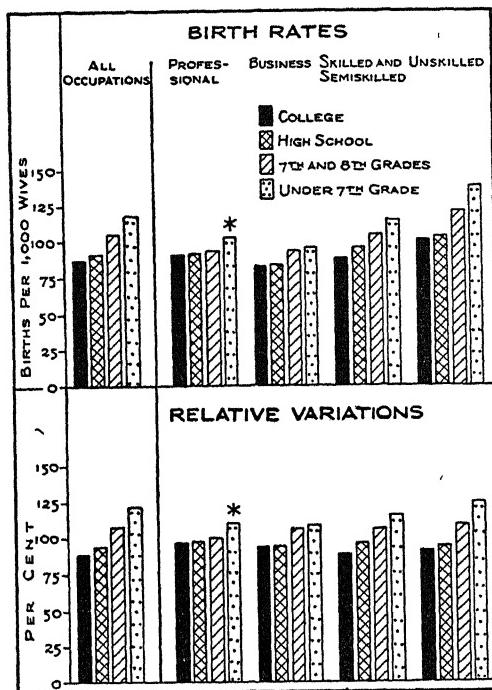

FIGURE 38.—*Variations in fertility rates by educational status within occupational classes. Native-white wives 15–44 years of age in the Health Survey*
Rate standardized for age. *See* Table 36.
* Rate based on 171 wives. For numerical distribution *see* Table 34.

from this, however, there was apparently a steadily increasing inverse relation between educational attainment and fertility as occupational class is progressively lowered. This appears to have been true on a relative as well as an absolute basis, as indicated in the lower panel, where the rate for each educational class within an occupational group is ex-

pressed as a per cent of the base rate[5] for the total occupa-
tional group.   Whether or not there is any principle of
increasing strength of the inverse relation between educa-
tional status and fertility with lowering of occupational
class, it is clearly apparent that the range of variations was

TABLE 37.—*Fertility rates in 1935 and their relative variations by occupational class*
of the head, within groupings by educational attainment of the wife.   Native-
white wives of childbearing age in the Health Survey

Rates standardized for age

Occupational Class of the Head	Live Births Per 1,000 Wives				
	All Educa-tional Levels	College	High School	7th–8th Grades	Under 7th Grade
Total (Base Rate[1]).................	96	88	92	102	109
Professional......................	94	91	92	94	103*
Business.......................	86	83	84	94	96
Skilled and Semiskilled	100	89	96	105	115
Unskilled........................	115	101	104	121	138
	Relative Variations (Base Rates Expressed as 100)				
Total (Base Rate)..................	100	100	100	100	100
Professional..................	97	103	100	93	95*
Business..........	89	94	91	92	88
Skilled and Semiskilled	104	101	105	104	105
Unskilled	119	115	113	119	127

[1] Base rates for specific educational classes were standardized for differences in
composition by occupation. *See* p. 157, footnote 5.
 * Rate based on 171 wives.   For numerical distribution *see* Table 34.

much less within the two "white-collar" classes than within
the two laboring classes.

[5] For this purpose the base rates for the several occupational classes were ad-
justed for internal differences in educational composition.   This was done by
weighting the rates for component educational classes within each occupational
group according to the proportionate importance of the given educational classes
in the total sample of native whites.   Corresponding procedures were followed in
the remaining analyses of relative variations in fertility within classes.

(b) *Variations in Marital Fertility Rates by Occupational Status, Within Educational Groups.* In Figure 39, based on Table 37, the data have been rearranged to show variations in fertility rates by occupational status of the head, at successively lower levels of educational attainment of the
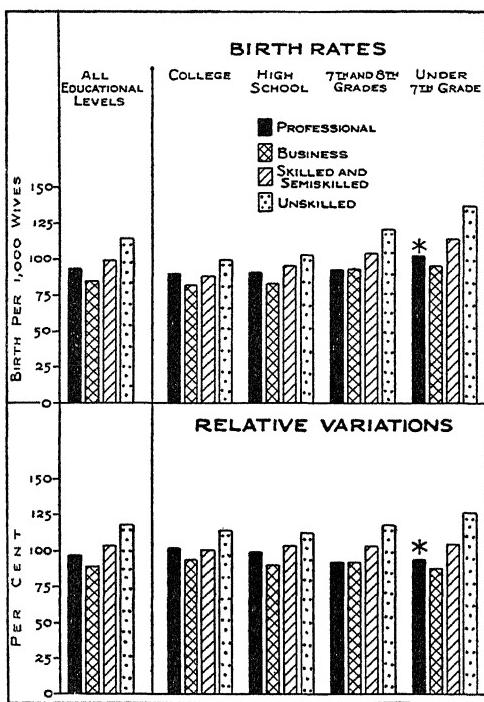

FIGURE 39.—*Variations in fertility rates by occupational status within educational groups. Native-white wives 15–44 years of age in the Health Survey*
Rates standardized for age.   *See* Table 37.
* Rate based on 171 wives.   For numerical distribution *see* Table 34.

wife. The pattern of fertility differentials by occupational status in the total sample of native-white wives, appeared to persist in virtually the same form at each level of educational status. Within each of three educational groups, the birth rate for wives of professional men surpassed that for wives of business men, and in the remaining class (7th–8th

grade), the rates for the professional and business classes were equal. Otherwise, the inverse relation was manifested.

On an absolute basis the ranges between lowest and highest fertility rates (business and unskilled) were noticeably wider among wives below high school status than among those above this level of formal education. This type of difference in spread held true to a slight extent on a percentage basis, but the most striking feature of the lower section of Figure 39 is the similarity in the relative spread of the marital fertility rates by occupational status at different levels of educational attainment.

(c) *Variations in Marital Fertility Rates by Family-Income Status, Within Occupational Groups.* In the total sample of native-white wives the inverse relation between birth rates and family-income status did not extend into the upper-income brackets (Table 38 and Figure 40, upper left sections). The birth rate for wives reporting incomes of $3,000 and over was no lower than that for wives reporting incomes of $2,000–2,999. This similarity in the rates for the two upper-income groups held true within the professional, business, and skilled classes, considered separately. The unskilled class presented an exception, but, as will be explained later, selective factors were possibly responsible for the conspicuously low rate of fertility of unskilled laborers who could qualify for inclusion in the "$3,000 and Over" income class.

In general, the inverse relation of fertility rates to income was least prominent among wives of professional men. Not only were the actual and the relative ranges of rates of less consequence than in any other occupational class, but there were only two levels of fertility rates by straight income status within the professional class: that for the two groups reporting incomes of $2,000 and over, and that for the three divisions reporting incomes of less than $2,000.[6] Within

[6] The rate computed separately for relief recipients, however, did provide an additional level within the professional class.

the business class, similar fertility rates were found for the three subdivisions with incomes in excess of \$1,500. Aside from this, the "staircase" picture of rising fertility rates with declining income was about as prominent on a relative

TABLE 38.—*Fertility rates in 1935 and their relative variations by family income, within groupings by occupational class of the head. Native-white wives of childbearing age in the Health Survey*

Rates standardized for age

Family Income Status	Live Births Per 1,000 Wives				
	All Occu-pations	Profes-sional	Business	Skilled and Semi-skilled	Unskilled
Total (Base Rate[1])..................	96	96	88	95	98
\$3,000 and Over..................	77	80	74	71	59*
2,000–2,999.	76	79	76	73	78
1,500–1,999....	81	102	75	84	78
1,000–1,499	90	99	89	90	94
Under \$1,000 and Total Relief.....	117	102	105	119	130
Total Relief.	*147*	*117*	*142*	*149*	*155*
	Relative Variations (Base Rates Expressed as 100)				
Total (Base Rate)...................	100	100	100	100	100
\$3,000 and Over.................	80	83	84	75	60*
2,000–2,999.....................	79	82	86	77	80
1,500–1,999	84	106	84	88	80
1,000–1,499	93	102	100	95	96
Under \$1,000 and Total Relief.....	121	105	118	125	132
Total Relief.....................	*153*	*122*	*161*	*157*	*158*

[1] Base rates for specific occupational classes were standardized for differences in composition by income. *See* p. 157, footnote 5.

* Rate based on 152 wives. For numerical distribution *see* Table 35.

basis as that observed within the skilled and unskilled classes.

(d) *Variations in Marital Fertility Rates by Occupational Status, Within Income Groups.* Perhaps the most striking chart in this series is Figure 41 (based on Table 39), showing

variations in marital fertility rates by occupational status at different levels of family income. At the same time it provides a good example of the misleading results that may
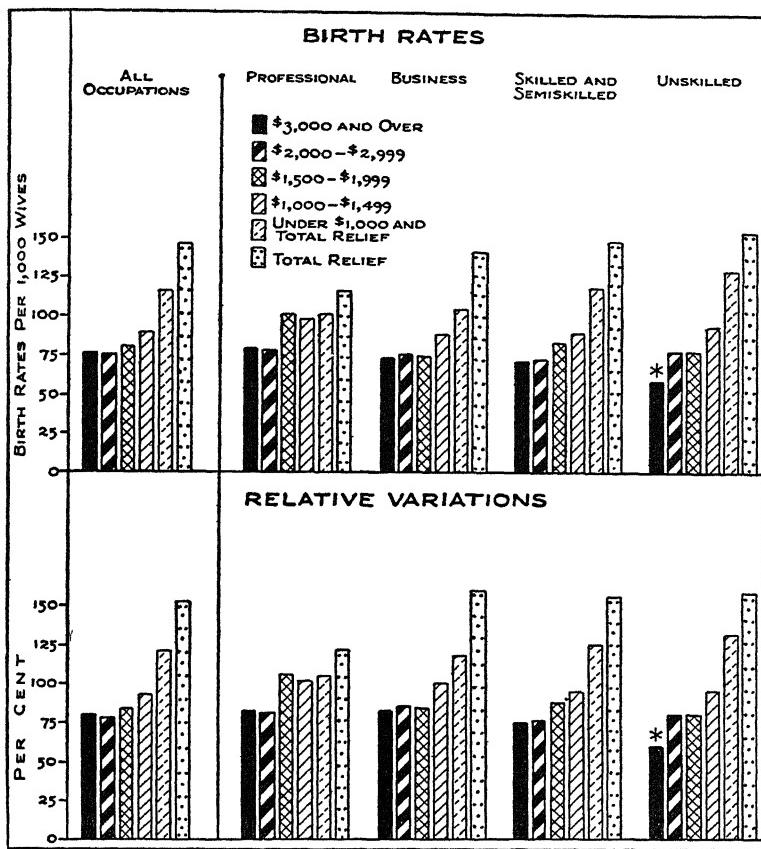

FIGURE 40.—*Variations in fertility rates by family-income status within occupational groups. Native-white wives 15–44 years of age in the Health Survey*
Rates standardized for age. See Table 38.
* Rate based on 152 wives. For numerical distribution see Table 35.

arise from selective factors. The chart would appear to indicate a systematic change from a direct to an indirect association between occupational status and fertility as one

proceeds from highest to lowest income brackets. Within the "$3,000 and Over" group the direct association was completely and sharply manifested. The computed rates, standardized for age, were highest for the professional class and lowest for the unskilled laborers. Within each of the

TABLE 39.—*Fertility rates in 1935 and their relative variations by occupational class of the head, within groupings by family income. Native-white wives of childbearing age in the Health Survey*

Rates standardized for age

Occupational Class of the Head	Live Births Per 1,000 Wives						
	All Incomes	$3,000 and Over	$2,000–2,999	$1,500–1,999	$1,000–1,499	Under $1,000 and Total Relief	*Total Relief*
Total (Base Rate[1]).. ...	96	72	75	81	91	113	*145*
Professional.	94	80	79	102	99	102	*117*
Business...	86	74	76	75	89	105	*142*
Skilled and Semiskilled ..	100	71	73	84	90	119	*149*
Unskilled........... . .	115	59*	78	78	94	130	*155*
	Relative Variations (Base Rates Expressed as 100)						
Total (Base Rate)	100	100	100	100	100	100	*100*
Professional............ .	97	111	105	126	109	90	*81*
Business...........	89	103	101	92	98	92	*98*
Skilled and Semiskilled. ...	104	99	97	103	100	105	*103*
Unskilled..	119	82*	104	97	104	115	*107*

[1] Base rates for specific income classes were standardized for differences in composition by occupation. *See* p. 157, footnote 5.

* Rate based on 152 wives. For numerical distribution *see* Table 35.

groups in specified income ranges from the $1,000 up to the $3,000 level, there was little systematic variation by occupational class in the height of the fertility rate. In the lowest-income groups, total under $1,000 and all relief cases, or relief cases considered separately, the *inverse* association was completely and markedly manifested. Stated in

another manner, the inverse relation between occupational status and fertility was virtually absent in classes above the $1,000 level, and the opposite type of association was apparent for the "$3,000 and Over" group.
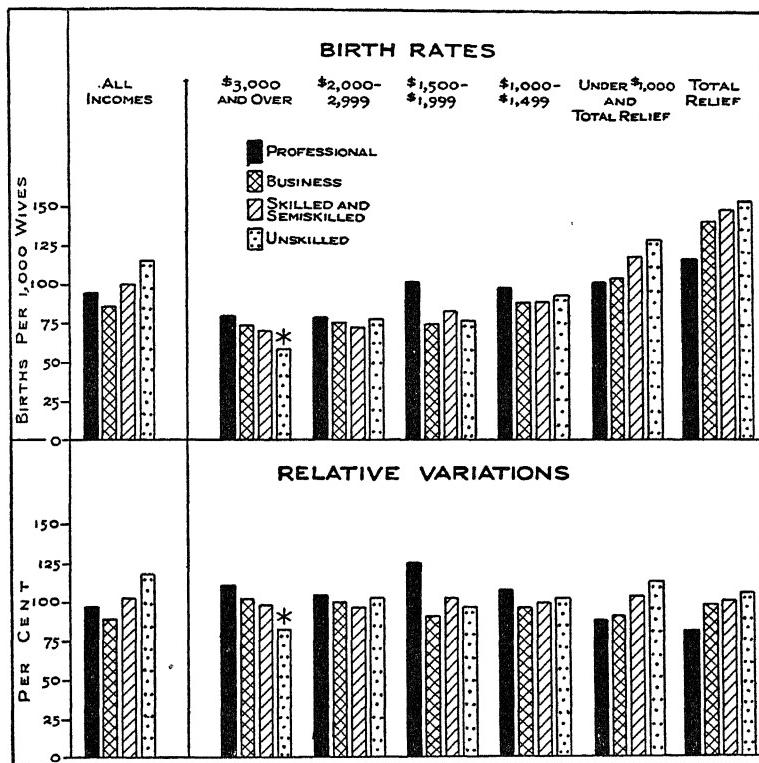

FIGURE 41.—*Variations in fertility rates by occupational status within income groups. Native-white wives 15–44 years of age in the Health Survey*

Rates standardized for age. *See* Table 39.
* Rate based on 152 wives. For numerical distribution *see* Table 35.

The question arises concerning the validity of the direct association between occupation and fertility at highest income levels. Although this direct association appeared to be about as strong as the *inverse* relation at the opposite

end of the income scale, tests of significance indicated that the difference between the rates for no two occupational classes within the "$3,000 and Over" group was statistically significant to the extent of being twice the standard error of the difference. This held true for alternate and extreme classes as well as for successive classes. On the other hand, among all wives reporting family incomes of less than $1,000 or relief status, the only inter-class difference that failed to stand up as statistically significant was the slight one between the rates for professional and business classes. When relief recipients were considered separately, the difference between the rates for the business and skilled groups and that between the skilled and unskilled classes were scarcely significant in a statistical sense, but the remaining inter-class variations were from two to three times the standard errors of the differences.

Since the pattern of variations appeared too systematic to arise from chance alone, it was difficult to dismiss the case of the direct association on the basis of lack of statistical significance. A restriction of the data to wives reporting "$5,000 and Over" yielded an even more marked positive association between fertility and occupational class, in so far as the professional, business, and skilled classes were concerned[7] and the inter-class differences in fertility were not statistically insignificant in all cases.

In exploring the possibility of selective factors in the direct association between fertility and occupational status at upper-income levels, it proved profitable to consider the conditions under which laboring families could earn $3,000 and over. Certainly few would be included in this class if the income status were based upon earnings of the husband alone. In the *Survey*, however, *family-income* status was determined by the combined incomes of the *total family, i.e.,* the head of the household and resident persons related to

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[7] In this restriction the unskilled class was too small for inclusion.

the head by blood, marriage, or adoption. Thus, the income status of a family could be raised considerably by earnings of resident children of working age, by gainful employment of the wife, and by earnings of resident relatives. In the case of married couples residing with their parents, the income status might even be set by the combined incomes of two families.

With the restriction of the present sample to married women under 45 years of age, it seemed likely that the more important conditions under which a laboring family might qualify for inclusion in the "$3,000 and Over" class were (1) gainful employment of the wife, and (2) residence with parents or other relatives.[8] The relevance of this to the problem at hand is that fertility rates tend to be low among wives employed outside the home and also among couples residing with their parents. The problem to be tested, therefore, was whether the occupational subdivision of a group ranking high with respect to *total family income* was accompanied by selective factors sufficient in strength to reverse the usual tendency for fertility to rise with lowering of occupational class.

Tabulations for such a test were not available for the total sample, but they were made for four cities in the *Survey*.[9] These provided rather convincing evidence that

[8] It is presumed that relatively few of the families represented by wives under 45 years of age would have their incomes substantially raised by earnings of off-spring. The restriction with reference to age would also tend to have families containing a married daughter represented in the sample by the younger woman rather than by the mother.

[9] Tests were available from duplicate punch cards for four cities in the *Survey*: Newark, Fall River, St. Paul, and Oakland. There were 17,728 native-white wives of childbearing age represented in these four cities.

The results of the tests are presented in Appendix Table 10. The native-white wives of childbearing age were cross-classified by family income and occupational status. The small size of the test sample necessitated the use of $2,000 and over as a top-income group. Within this group, as in the top-income class in Figure 41, however, the direct association between fertility and occupational status was initially found. The interesting point, however, is that with lowering of occupa-

the direct association of fertility rates and occupational status within the "$3,000 and Over" group arose in large part from the influence of the above described factors. Thus, although the actual data in Figure 41 indicate a direct association between occupational status and fertility within the "$3,000 and Over" group in about as strong form as the inverse association at the other end of the income scale, the former situation is doubtless due to selective factors. This conclusion was reached in a preliminary article,[10] but in that report the writer accepted too readily the actual data for the *central-income* groups. The subsequent tests rather definitely indicated that, although the selective factors decreased in strength with lowering of total family-income status, they were absent only within the group of lowest income. Although the tests provided no conclusive evidence of the role of the selective factors in the absence of occupational differentials in fertility within the central-income groups, they indicated the presence of bias that would contribute toward the concealment of any real inverse relation between birth rates and occupational class within the intermediate-income groups.

Certain generalizations may be drawn from Figures 38–41. In the first place, each chart attested to some degree of association of fertility with a given factor apart from the influence of the other variable. This type of independent association is brought out in summary form in Figure 42

tional status within this top-income class there were sharp increases in proportions of families having two workers or more; the wife gainfully employed; relatives in residence; or the married couple forming a secondary family living in the home of parents. Even more interesting was the modification of the association between fertility and occupational status within the top-income group when the sample was restricted to families without any of the above characteristics, *i.e.*, to primary families without multiple workers and without relatives in residence. When this restriction was made, the birth rate for the professional class remained higher than that for the business, but the rate for the skilled group changed from lowest to highest position for the three classes represented.

[10] Kiser, 1941, p. 164.

which presents the *average* effect of standardization for one variable on the relative spread of fertility rates according to another criterion of socio-economic status. Another point suggested by Figures 38–41 is that the inverse relation tended to be more pronounced within the lower than within the upper classes of the primary division. In primary divisions by income the inverse relation of fertility to occupational class was confined to the low-income groups, but selective factors were partially responsible for this situation.

RELATIVE IMPORTANCE OF SPECIFIC FACTORS AFFECTING FERTILITY

Although the *Survey* data have only limited value for studies of the relative importance to fertility of the three factors (occupational status of the head, educational attainment of the wife, and family income), consideration of the material from this point of view helps to clarify certain aspects of the problem and provides illustrations of limitations and pitfalls to be avoided in future studies. There are, first of all, general limitations inherent in the character of the indices of fertility and socio-economic conditions. As previously pointed out, whereas the index of fertility and family income both related exclusively to an identical period,[11] the depression year of 1935, the occupational classifications were based upon the *usual* occupational class of the head, regardless of the nature of his work or employment status at the time of the *Survey*. Educational attainment, in the nature of the case, was even less indicative of the changed economic condition of the family during the depression, since it related to the accomplished fact of school attendance.

With data of the above type, it is perhaps not surprising

[11] The income data coincided in time with the birth-dates of all infants enumerated and in approximately one-fourth of the cases coincided with dates of conception.

that the *Survey* indicated a somewhat closer relationship of fertility rates to income than to occupational status of the head or to educational attainment of the wife.   Some results of this nature were found both from cross-classified data and from other types of materials in the *Survey*.   At best, they must be qualified with the statement that income, as defined in the *Survey*, probably provided a more sensitive barometer of socio-economic status during the year for which birth rates were studied than did either "usual" occupational status of the head or educational attainment of the wife. Even within the above limits a further qualification, recognition of the presence of selective factors, must be made in the case of the cross-classified data.   For instance, Figure 41 appeared to indicate a virtual equality of fertility rates by occupational class within specific intermediate-income groups.   Since this "equalization" occurred in no other cross-classification, the data at their face value would appear to suggest a closer relation of fertility to income than to occupational status of the head or to educational attainment of the wife.   As previously stated, however, selective factors inherent in the cross-classification by family income and occupational status might have been sufficiently strong to conceal any real inverse relation between birth rates and occupational class within the central-income groups.

    The above limitations, of course, also apply to the use of the cross-classified data in procedures of standardization, Table 40 and Figure 42.   Within each of the three panels of Figure 42, the relative range of the fertility rates according to a specified attribute is shown: first, regardless of other variables, and then, after standardizing for another variable.   The actual results indicated that the relative spread of fertility rates by occupational status was substantially reduced through standardization for income, but it was not appreciably changed through standardization for educational attainment (top panel, Figure 42).   Further-

TABLE 40.—*Fertility rates and their relative variations by specified socio-economic attributes, considered singly and after standardizing for another variable. Native-white wives of childbearing age in the Health Survey*

Rates standardized for age

Socio-Economic Attribute	Fertility Rates	Relative Variations[1]
Total Native White (Base Rate)...................	96	100
Occupation Alone		
Professional	94	97
Business............	86	89
Skilled and Semiskilled......................	100	104
Unskilled.........	115	119
Occupation-Income Constant[2]		
Professional	96	100
Business	88	92
Skilled and Semiskilled...	95	98
Unskilled	98	102
Occupation-Education Constant		
Professional......................	93	96
Business	87	91
Skilled and Semiskilled...	99	103
Unskilled.................	110	115
Income Alone		
$3,000 and Over	77	80
2,000–2,999......................	76	79
1,500–1,999......................	81	84
1,000–1,499...	90	93
Under $1,000 and Total Relief	117	121
Total Relief........	*147*	*153*
Income-Occupation Constant		
$3,000 and Over.....	72	74
2,000–2,999	75	78
1,500–1,999................	81	84
1,000–1,499...	91	94
Under $1,000 and Total Relief	113	118
Total Relief................	*145*	*150*

[1] In this column, each fertility rate in the parallel column is shown as a per cent of 96, the rate for all native-white wives in the sample. For calculations, the rates correct to one-tenth were used, though not so presented.

[2] The cross-classified material afforded the basic data for standardization. The rates by occupation with income "held constant" were derived by weighting component rates by income within each occupational class according to the income distribution of the total sample of native-white wives. Corresponding procedures were used for the remaining standardizations.

TABLE 40.—*Concluded*

Socio-Economic Attribute	Fertility Rates	Relative Variations
Education Alone		
College	87	90
High School	91	95
7th–8th Grades	105	109
Under 7th Grade..	118	122
Education-Occupation Constant		
College	88	91
High School	92	95
7th–8th Grades	102	105
Under 7th Grade	109	113

more, the reverse procedure of standardizing for occupational status effected no appreciable change in the relative spread of the rates by income (middle panel), or by education (bottom panel). The presence of selective factors in the basic cross-classifications by family income and occupation, however, lessens the value of this type of evidence as a basis for believing that fertility rates in the *Survey* were more closely associated with income than with occupational status or educational attainment.[12]

Suggestions of the relatively close association of income and fertility rates in the *Survey*, however, have emerged from materials other than the cross-classified data. For instance, the *Survey* data for native-white wives enumerated in cities of the Pacific Coast, where birth rates are low, failed to indicate systematic differences in fertility by occupation

[12] Since the selective factors described above appear to accrue from the use of total family income for cross-classifications by income and occupation, they presumably have no bearing on cross-classifications by occupation and education. Standardization for education effected little change in the spread of the fertility rates by occupation. Likewise, standardization for occupational status had little effect on the spread of the rates by educational attainment. This suggests that there was little or no average difference between occupational status and educational attainment in so far as closeness of association with fertility is concerned. It is necessary to keep in mind, however, that Figure 42 is based upon averages and therefore conceals some of the cross-relationships disclosed in Figures 38 and 39.

or education. In the classification by income, however, the
inverse association was generally manifested, at least in so
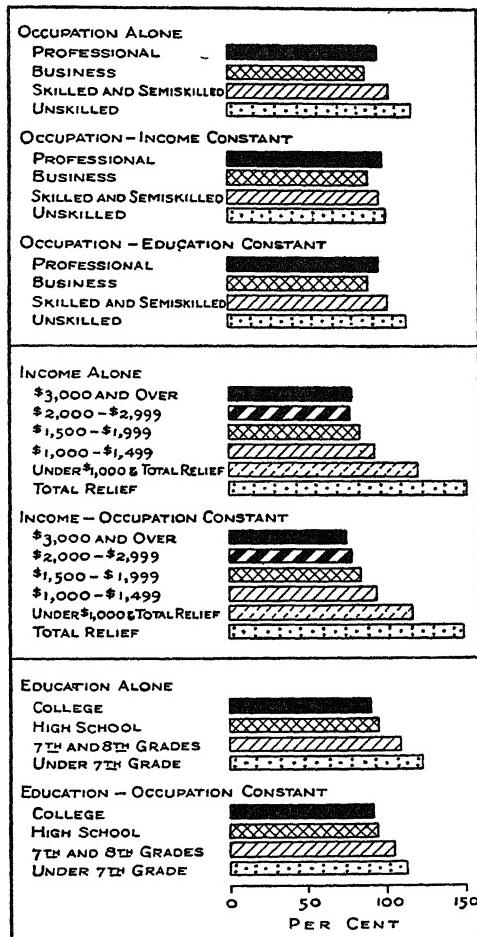
FIGURE 42.—*Relative variations of fertility rates by specified socio-economic attributes considered alone, and average effect of standardizing for another variable. Native-white wives 15–44 years of age in the Health Survey*
Rates standardized for age. *See* Table 40

far as the broad outlines were concerned (*cf.* Figures 10,
20, and 30). Likewise, among the colored wives in the

total sample, only slight inter-class differences in fertility
were observed in the classifications by occupation and educa-
tion. Although relatively few colored wives reported high
incomes, the inverse relation between fertility and income
status was consistent and clear-cut.

Some further suggestion of the closer relation of income
than occupational or educational status to fertility differ-
entials in this study may be found in the analysis of varia-
tions in fertility in relation to proportionate importance of
the classes considered. For convenience, these data from
Chapters III–V are brought together in Figure 43. It will
be noted that whereas 33 per cent of the native-white wives
fell into the lowest-income group (under $1,000 or relief),
only 6 per cent reported less than 7th grade in schooling,
and only 9 per cent were wives of unskilled laborers. And
yet, the fertility rates for the three groups were essentially
the same. In other words, the fertility rate was just as
high for the third of the sample ranking lowest with respect
to income as for the 6 or 9 per cent ranking lowest with
respect to educational or occupational status. Less striking
but corresponding situations may be found in the data for
foreign-white and colored wives.[13]

In concluding, it should be emphasized that regardless of
the nature of the *Survey* data (cross-classified or in other
form), they cannot be interpreted as indicating that fertility
is universally more closely associated with family income
than with occupational or educational status. As used here,

[13] The inclusion of all relief families, regardless of income, in the "Under $1,000
and Total Relief" category introduces an indeterminate amount of bias in the
above comparisons. On the theory that receipt of relief was a sufficient index of
economic status, enumerators in the *Survey* were not required to solicit income
data from such families. The allocation of relief families to proper income cate-
gories would probably induce no appreciable change in the distribution of the total
samples, but the fertility rate for a strict "Under $1,000" (regardless of relief)
group would probably be somewhat lower than the rate observed for the class,
"Under $1,000 and Total Relief."

fertility rates related to a single year preceding enumeration. Since family income related specifically to the same period, this variable probably provided a more sensitive reflection of the network of conditions affecting fertility during a de-
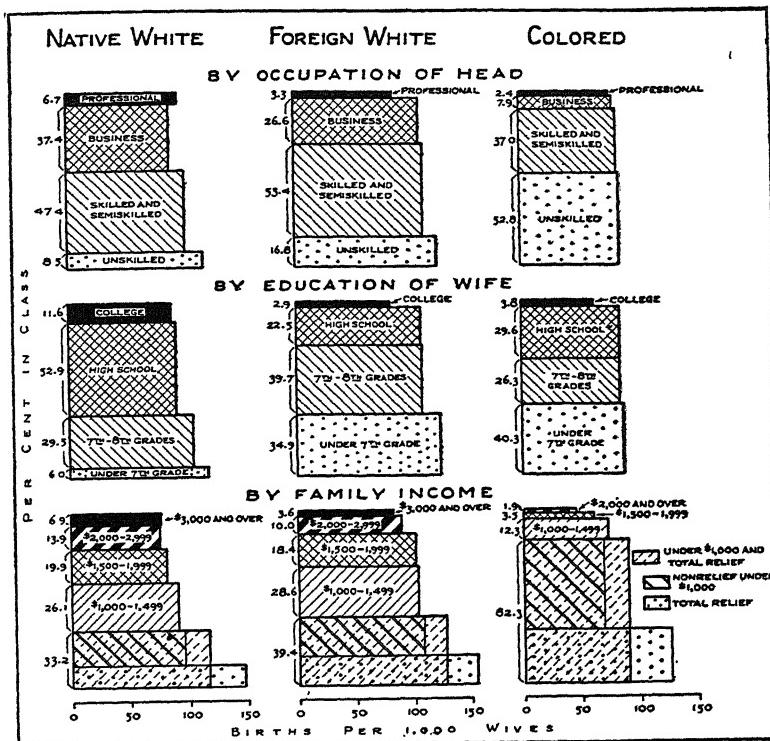

FIGURE 43.—*Fertility rates in 1935 by specified socio-economic classes in relation to proportionate importance of the classes within each color-nativity group. Wives 15–44 years of age in the Health Survey*
Rates standardized for age. *See* Tables 12, 20, and 28

pression year than did either the *usual* occupational class of the head or the amount of schooling of the wife. Different results might have been secured had the index of fertility related to total number of children ever born, or had the

Survey been made during a period less characterized by depression conditions.[14]

Perhaps the outstanding value of the analysis of the *Survey* data from the standpoint of relative importance of the several factors affecting fertility consists in lessons of a methodological nature. Briefly, these are two: (1) In so far as possible the indices of socio-economic status should be comparable with respect to time. (2) Income of the husband alone is preferable to that for the total family if it is desired to subdivide the income groups by another attribute of socio-economic status.[15]

[14] It is of interest to note, however, that Thompson's intensive study of differential fertility in Butler County, based upon special tabulations of 1930 Census data, indicated that differences in average numbers of children were more closely associated with economic differences, as measured by rentals, than with occupational differences. This held true for both northborn and southborn urban residents of the area. Among families paying high rents there was marked uniformity in the low birth rates, regardless of birth place or occupational status. *See* Thompson, *et al.*, 1941, pp. 10, 33–43.

Note: The Census of 1930 was taken during the initial year of the depression, but the index of fertility in the above study was based upon children under 5. Furthermore, under Census definitions, occupational and rental status were somewhat more comparable with respect to time than were occupational and income status in the Health Survey. Thus, the Butler County data are presumably free from certain limitations to which the *Survey* materials were subjected. On the other hand, it seems possible that biases of the type introduced in cross-classifications by occupation and family income might also be present in Thompson's cross-classifications by occupation and rental value of the home. The unskilled laborers in the high-rent class, for instance, may have been disproportionately represented by secondary families living with relatives and by those in which the wife was gainfully employed.

In connection with the use of rentals in studies of this type, it is also well to point out that amount of rent itself may be pretty closely influenced by size of family. The advent of another child into the family very often means the immediate necessity of a larger house. Sometimes this need is met by paying increased rentals; sometimes by moving into an area where rents are cheaper.

[15] The above recommendations relate to studies of factors affecting fertility, when techniques of cross-classification are used. The main objective of the National Health Survey was that of studying illness and health among different elements of the population. The inadequacies of indices for certain studies of fertility differentials do not necessarily apply to studies of health and sickness.

Even with the fulfillment of the above conditions, the procedures used in this study would not afford the intensive analyses that are really needed, for it is recognized that the factors affecting human fertility are intricate and complex. What has long been needed is an intensive study in which the fertility histories and other data for couples are "followed through," and in which the tools of the psychologist and the sociologist supplement those of the statistician. Experimentation with this type of approach is now being made in a cooperative study of the social and psychological factors affecting human fertility.[16]

SUMMARY

To secure some data on the question of variations in fertility rates *within* as well as *between* broad socio-economic groups, each of four occupational classes was tabulated by educational attainment of the wife and retabulated by total family income. The analysis was made for native-white wives of childbearing age in the *Survey*, of whom there were 284,246.

The cross-classifications afforded data on the make-up of given classes and provided a concrete demonstration of the interrelation of different criteria of socio-economic status. Two-dimensional percentage scales were used to portray class differences in internal composition in relation to the proportionate importance of the primary classes considered.

Marital fertility rates were analyzed by educational attainment and by total family-income status *within* occupational groups. The data were also arranged to show variations in fertility rates by occupational class *within educational and income groups*.

Collectively, the data attested to some independent bearing on fertility of the three factors: occupational status of the head, educational attainment of the wife, and total

[16] For a brief report, *see* Reed, 1941, pp. 984–985.

family income. In each type of cross-classification there was at least some instance of an inverse relation between birth rates and socio-economic status. Internal differences in fertility appeared to be more pronounced within the "lower" than within the "upper" classes.

There were suggestions that marital fertility rates in the *Survey* were more closely associated with income than with occupational or educational status. The significance of these results, however, is limited by certain characteristics of the *Survey* data. A general qualification consists in the fact that both fertility and income related specifically to the *Survey* year, the depression year of 1935. Neither the *usual* occupation of the head nor the past record of school attendance of the wife would be expected to provide as sensitive a reflection of the condition of the family during the specific year for which birth rates were studied as would the amount of income for that year.

The other limitation was introduced by the use of total family income and has bearing only on the cross-classified data. In the cross-classification by income and occupation, the usual inverse relation between occupational status and fertility was not found within specific income groups above the $1,000 level. On their face, these data would seem to indicate a particularly close association of fertility to income. Available tests indicated, however, that since income related to the total family, certain selective factors accompanied the subdivision of "income" classes by occupational status, and that these were of such a nature as to conceal any real inverse relation between birth rates and occupational class within specific income groups above the $1,000 level.

The chief value of the analysis of cross-classified data has perhaps been the disclosure of the above type of bias. If cross-classifications between income and other criteria of socio-economic status are desired, the selective factors with

respect to fertility can perhaps be avoided by the use of income of the husband rather than income of the total family. It also seems likely that a factor like rental value of the home would suffer from the same deficiencies as "total family income" if rental classes are subdivided by other socio-economic attributes for studies of differential fertility.

CHAPTER VII

MARITAL FERTILITY RATES COMPARED
WITH GENERAL FERTILITY AND
REPRODUCTION RATES

THE FOUR preceding chapters have been devoted exclusively to the question of class differences in the fertility of *married* women. Prominent in the findings was the *exception* to the traditional pattern of inverse relation between marital fertility and social status. In general, this consisted in the failure of classes conventionally ranked at the top (by specific criteria of socio-economic status) to be universally characterized by lowest birth rates. In contrast to the situation existing in 1910 in this country, the native-white wives of professional men now appear to be as fertile, or more fertile, than the wives of business men. The fertility levels of married women reporting college attendance were, on the average, but little below those for wives of high school status. Similarly, the inverse relation between income status and fertility did not extend into the upper brackets. These findings, together with results from other recent studies, suggest a possible trend toward a contraction of class differences in the fertility of married women. (*See* pp. 55–61.)

To confine attention to variations in *marital* fertility, however, gives an incomplete picture. It is known that there are class differences in proportions married, especially at early ages of the childbearing span. Thus, although married women of college status seem to be almost as fertile as wives of high school attainment, studies have repeatedly shown that marriages occur with less frequency and at later

ages among college women than among those ot less educational attainment.

It is of interest, therefore, to analyze the character of class differences in fertility when all women of childbearing age in a given class, regardless of marital status, are used in the population bases. This procedure serves to add to differences in marital fertility the factor of variations in proportions married. Such data are not only of value for more adequate interpretation of trends in class differences in *marital* fertility, but they also supply basic materials for computing reproduction rates, the conventional indices of population replacement.

Material of the above type was secured through special tabulations from the Health Survey by Dr. B. D. Karpinos, of the United States Public Health Service. He and the writer collaborated in an article in which class differences in marital fertility rates were compared with class differences in crude birth rates, general fertility rates, and reproduction rates. The outstanding findings are presented in this chapter, but the reader is referred to the earlier report[1] for a more detailed discussion.

Character and Limitations of the Data. The present analysis is restricted to urban-white females of childbearing age in the total urban areas of the *Survey*. These numbered 596,474, of whom 336,226[2] were married. The basic data consisted of births during the *Survey* year in relation to all females 15–44 years of age, regardless of marital status. The women were classified by age, family income, and educational attainment. From these materials, four types of rates[3] were computed by income and educational status. These

[1] Karpinos and Kiser, 1939.

[2] The married women included 284,246 native whites, 51,901 foreign whites, 18 whites with nativity unstated, and 61 with color unstated, but presumed to be white.

[3] In addition, crude birth rates were presented according to family-income status in the more detailed study. *See* Karpinos and Kiser, 1939, pp. 376–377.

were the marital fertility rate, the general fertility rate, the gross reproduction rate, and the net reproduction rate.[4]

There are certain limitations in the data that should be described at the outset. In the first place, since the present chapter includes rates based upon total female populations of childbearing age, the question of representativeness with respect to proportions married has special pertinence. As previously described, the proportions married tended consistently to be somewhat lower in the *Survey* than in the 1930 Census. However, after taking into account the slump in the marriage rate during the early years of the depression, and the *Survey-Census* differences in classification of individuals reported as separated but not divorced, the *Survey* appears to be substantially representative with respect to proportions married. (*See* p. 9.)

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[4] The *marital fertility rate*, the same type of index as that primarily used in other sections of this book, expresses the number of births during the *Survey* year per 1,000 married women 15–44 years of age. The rates were standardized for age by weighting age-specific marital fertility rates according to the 1930 Census age distribution of white married women 15–44 in the United States.

The *general fertility rate* presents the number of births during the *Survey* year per 1,000 females 15–44 years of age regardless of marital status. These rates were standardized for age by weighting the age-specific general fertility rates according to the 1930 Census age distribution of all white women 15–44 in the United States.

The *gross reproduction rate* interprets the general fertility rate in terms of one generation. It expresses the average number of daughters that would ever be borne per woman among a cohort of females starting life together if a given schedule of age-specific rates of general fertility applied to them as they pass through successive ages and if all in the original cohort survived the childbearing span. The rate is derived by the addition of age-specific rates of general fertility; the sum expressed as average number of daughters per individual woman. In practice, if the basic data are in the form of five-year age groups and relate to births rather than to daughters during the year considered, the sum is multiplied by 5 and then reduced on the basis of a reasonable sex ratio at birth.

The *net reproduction rate* differs from the gross in that it removes the postulate that all females survive the childbearing period. It expresses the average number of daughters that would ever be borne per woman among a cohort of females starting life together if given schedules of age-specific fertility and mortality remained in operation.

The factor of under-enumeration of births also has special relevance in so far as reproduction rates are concerned, since such rates are designed to afford indices of potential population increase or decrease. This factor should be kept in mind in considering the magnitude of the reproduction rates computed from *Survey* data. In the present analysis, however, under-enumeration is presumably of no more consequence to the pattern of *class differences* in reproduction rates than in marital fertility rates. This could not be said if colored populations were considered because illegitimate births enter into the picture in reproduction rates, and these are presumably less adequately reported than legitimate births and probably occur more frequently in lower than in upper socio-economic groups. The present data, however, are restricted to whites.

Perhaps more important than other possible biases are those accompanying classifications by income status. As previously stated, income relates to the entire family, the head and members of the household related to the head by blood, marriage, or adoption. This amount was coded and repeated on the punch card for each member of the household.[5] Unmarried (and therefore infertile) females of child-bearing age would thus appear to be unduly selected into the higher-income groups due to greater likelihood of having their income status determined by combined earnings of

[5] Under the coding procedures described above, the income status of the employer family appeared as a descriptive item on the punch card for any resident servant of the household. This was of small consequence in so far as marital fertility rates are concerned, because servants were not included as members of the household in the original enumeration unless they "slept in," and these constituted only 0.1 per cent of the married white females 15–44 years of age in a selected sample of the *Survey*. (*See* p. 113.) Since resident servants were mainly unmarried and attached to families with incomes of $3,000 and over, they and other unrelated members of households were excluded from all analyses of general fertility and reproduction rates by *income*. The unrelated persons were included and classified in their own right in all types of fertility rates by *educational* attainment.

two or more people, *i.e.*, the earnings of the father, plus those of the unmarried daughter herself or those of resident brothers or sisters. To some extent, the selective factors may operate in the same direction even when the income status is determined solely by the earnings of the household head. For instance, the family-income status of an unmarried girl 20 years of age might be determined by the earnings of a middle-aged father, whereas that of a married woman of the same age and social background would be set by the earnings of a young husband who is just beginning his employment career.

Since there was no possibility of testing the importance of this bias directly, it is fortunate that similar analyses of fertility differentials could be made on the basis of educational attainment,[6] a highly personal attribute. Unlike family-income status, educational attainment is not changed by the event of marriage. The temporal stability of educational status not only serves to avoid certain biases accompanying classifications by family income, but it is also a desirable characteristic in connection with classifications for reproduction rates. A reproduction rate for a given socio-economic class is based on assumed conditions of permanence of status throughout the childbearing span.

Proportions Married by Family Income and Educational Status. With regard to findings, attention may be given

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[6] The special tabulations to yield general fertility and reproduction rates of the surveyed white women according to educational attainment were derived in part on a sampling basis. The classification of white births, by age and educational status of the mother, was available from the basic tabulations concerning marital fertility. No tabulations by educational status were made for the total sample of white females in the desired five-year age groups of the childbearing span. The population bases of this type were therefore procured through the use of a 0.5 per cent random sample which had previously been mechanically established, tested for representativeness, and used for various purposes in analyses of the *Survey* materials. For the eventual computation of general fertility rates, the basic procedure was to multiply the number of females in each age-education cell from the 0.5 per cent random sample by 200 and to relate these products to the corresponding actual numbers of births.

first to the question of differences in proportions married according to family income and according to educational status. As indicated in Table 41 and Figure 44,[7] class differences in proportions married were especially prominent among women under 30 years of age. Among females 20–24 reporting family incomes of $3,000 and over, only 15 per cent were married. About one-fourth of the women of similar ages reporting family earnings of $2,000–2,999 were

TABLE 41.—*Proportions married among surveyed urban-white females by age, family income, and educational attainment*[1]

Socio-Economic Class	Age of Women at Enumeration					
	15–19	20–24	25–29	30–34	35–39	40–44
Annual Family Income						
$3,000 and Over..............	1.7	15.3	42.9	63.4	74.2	77.0
2,000–2,999.................	2.4	25.4	60.1	75.9	80.5	82.8
1,500–1,999	3.6	35.0	68.2	79.6	83.0	82.8
1,000–1,499	5.9	48.0	73.6	80.7	82.1	80.1
Under $1,000 and Total Relief..	9.6	48.8	70.9	75.9	74.6	72.6
Total Relief.	*7.8*	*47.5*	*73.8*	*78.9*	*77.5*	*76.2*
Educational Attainment						
College...................	2.0	22.7	55.8	60.0	80.6	79.0
High School	5.9	41.9	·65.1	81.5	79.3	82.6
7th–8th Grades	12.2	50.1	76.9	74.2	75.0	76.7
Under 7th Grade.............	15.6	50.6	72.6	90.7	80.9	72.3

[1] Adapted from: Karpinos and Kiser, 1939, p. 388.

married, and nearly one-half of those in families earning under $1,000 were married. Similarly, females 20–24 reporting college attendance were married in only 23 per cent of the cases, as contrasted with 42 per cent for women of

[7] The proportions married by income relate to a selected group of cities comprising 76 per cent of all surveyed urban white females 15–44 years of age. These data include all females in households, regardless of relationship to the household head. The proportions married, by educational attainment, are based on data for all cities in the *Survey*, but were derived in part from the random sample described in footnote 6. *See also* Karpinos and Kiser, 1939, pp. 375, 388–389.

comparable age reporting high school status and about 50 per cent for women who failed to reach high school.[8]

Marital and General Fertility Rates. The bearing of class differences in proportions married on the problem of differential fertility may be visualized from Figure 45, based on Table 42. In the upper half of the chart the marital fertility rates and their relative variations are shown by family-
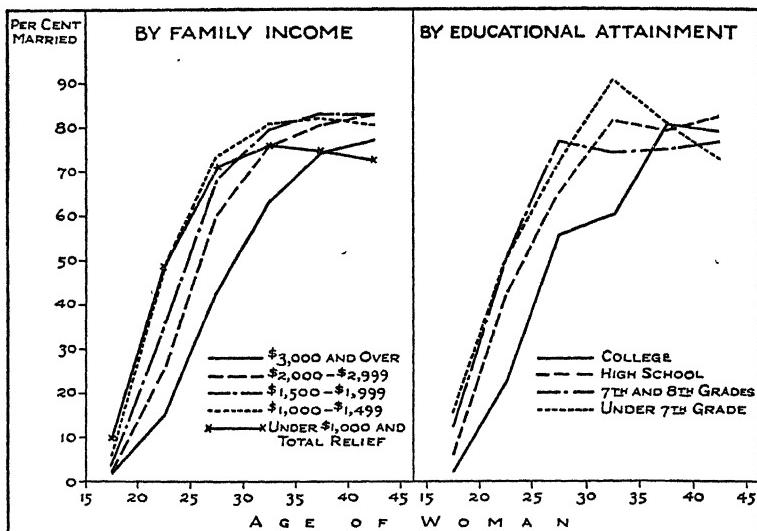

FIGURE 44.—*Proportions married among urban-white females in the Health Survey by age, family income, and educational attainment*
See Table 41. Adapted from: Karpinos and Kiser, 1939, p. 388

income status and by educational attainment. In the lower half of the chart the corresponding general fertility rates and their relative variations are shown. Class for

[8] It should be kept in mind that the above proportions do not relate to women "ever married," but to those married and living with husbands at the time of the *Survey*. This characteristic of the data possibly helps to account for the partially direct relation between socio-economic class and proportions married at later ages of the childbearing span, particularly 40–44. It is possible that widowhood at these ages tended to increase in importance with lowering of socio-economic status.

TABLE 42.—*Standardized marital and general fertility rates in 1935 and their relative variations by annual family income and educational attainment. Urban-white females of childbearing age in the Health Survey*[1]

Income Status and Educational Attainment	Standardized[2] Fertility Rates		Relative Variations	
	Marital	General	Marital	General
Annual Family Income				
$3,000 and Over	84.6	31.1	79	55
2,000–2,999.........	84.8	41.6	79	73
1,500–1,999..	93.0	48.4	87	85
1,000–1,499........	102.5	60.5	95	107
Under $1,000 and Total Relief	132.9	82.1	124	145
Total Relief......	*166.3*	*99.4*	*155*	*175*
Educational Attainment				
College..............	96.9	39.1	90	69
High School	102.5	53.7	95	95
7th–8th Grades...................	117.5	71.0	109	125
Under 7th Grade........	130.7	82.9	121	146
Total Population...................	108.9*	56.8	100	100

[1] Adapted from: Karpinos and Kiser, 1939, pp. 376 and 386.

[2] All rates were adjusted according to the distribution of the urban population in the United States by geographic region and size of city. The marital fertility rates were standardized for age on the basis of the white married female population (15–44) in the United States, 1930, and the corresponding total female population 15–44 was used for standardizing the general fertility rates.

* For computing relative variations, 107.4 was used as the base rate by income and 108.0 as the base rate by education. *See* p. 187, footnote 10.

class, the marital fertility rates[9] were naturally higher than the general fertility rates, since the population bases for the former were restricted to *married* women of childbearing

[9] Attention should be called to certain differences between the marital fertility rates presented in this chapter and those in other chapters. Like other types of rates in the present chapter, the marital fertility rates relate to white women, regardless of nativity, and they were adjusted for under-representation of small cities in the *Survey*. The age standard was also slightly different from that employed in other chapters in that it was based upon *white* wives instead of *total* wives of childbearing age in the 1930 Census. These departures were made for the original special study (Karpinos and Kiser, 1939) which affords the basis for the present chapter.

age, whereas the latter were based upon *all* women of child-bearing age. The interesting point, however, is that, whereas the marital fertility rates were the same for the two highest income brackets, the general fertility rate for the
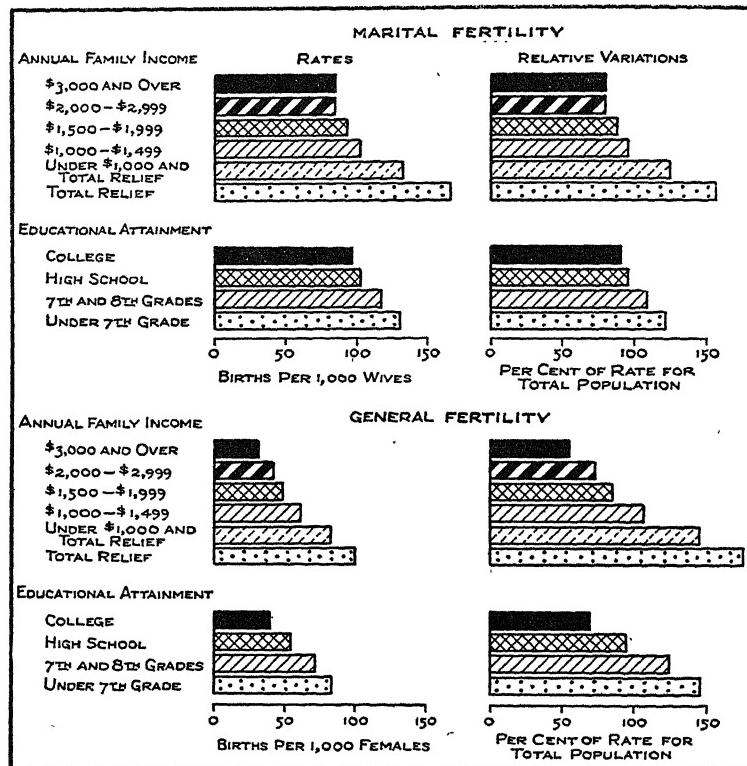
FIGURE 45.—*The pattern of differential marital fertility compared with that of differential general fertility. Urban-white females 15–44 years of age in the Health Survey*
See Table 42. Adapted from: Karpinos and Kiser, 1939, pp. 376 and 386

"$3,000 and Over" class was substantially below that for the "$2,000–2,999" group. The explanation lies in the difference between the two income classes with respect to proportions married. Likewise, and for the same reason,

the college-high school disparity was of much smaller conse-
quence in marital fertility rates than in the general fer-
tility rates.

In order better to compare the *relative* spread of marital
and general fertility rates, attention may be directed to the
sections at the right of Figure 45. The procedure was to
express the marital and general fertility rates for specific
income or educational classes as percentages of the cor-
responding rates for the total populations involved.[10] On a
relative basis the inter-class differences in general fertility
were sharper than those in marital fertility. Therefore, the
contrast between extreme classes was proportionately greater
on the basis of general than of marital fertility. The marital
fertility rate for women of relief status was approximately
twice that for women reporting incomes of $3,000 and over.
The general fertility rate for relief clients was over three
times as high as that for women in the "$3,000 and Over"
class. Likewise, when the analysis was restricted to married
women, the rate for wives reporting under 7th grade was
only about 35 per cent higher than that for women reporting
college attendance. The general fertility rate for the "Under
7th Grade" group was a little over twice as high as that for
college women.

It is therefore apparent that although changes may have
developed in the pattern of class differences in marital fer-
tility, there still appears to be a sharply defined and
consistently inverse relation between fertility and socio-
economic status when the factor of differences in proportions
married is brought into the picture. This is important from

[10] For computing percentages to show relative variations, the marital fertility
rates for the base population were adjusted to the distribution of all females 15–44,
by income and education. (*See* footnote *, Table 42.) This was done to prevent
unequal influence of class composition on the base rates for married women as
compared with those for all women. In the case of general fertility rates in Table 42
and of gross and net reproduction rates in Table 43, the respective types of rates
for the total population were used as bases for computing percentages.

the standpoint of reproduction rates, for the rate at which a general population reproduces itself obviously depends upon proportions married at different ages as well as upon marital fertility.

Gross and Net Reproduction Rates. Reproduction rates are conventional indices of population replacement. They are derived from the basic materials that were used for computing the general fertility rates standardized for age. These basic data are the age-specific birth rates during one year among women of childbearing age, regardless of marital status. However, the general fertility rate for women 15–44 is simply a standardized average of the age-specific birth rates for one year. The reproduction rates are designed to indicate what the age-specific fertilities yield in terms of population replacement *during one generation.* Specifically, the *gross reproduction rate* indicates the average number of daughters that would be borne per woman among a cohort of females starting life together, if the existing age-specific fertilities should continue and if all females in the cohort should survive to the age of 45. The assumption regarding universal survival is obviously highly hypothetical, but the gross reproduction rate is merely a device to measure the generation fertility of a group apart from mortality.

The *net reproduction rate* involves allowance for age-specific mortalities.[11] With this exception, it is similar in concept and in method of computation to the gross reproduction rate. A net reproduction rate of 1.0 for a given population means that the existing age-specific *fertilities and mortalities* of a given group of females of childbearing age are such as to yield an average of 1,000 daughters per 1,000 females starting life together, provided that the schedules of age-specific birth

[11] The differential mortality rates used by Karpinos in computing the net reproduction rates in this study were adapted from Hauser's data for Chicago families, grouped according to median rentals of the Census tracts in which they resided. *See* Hauser, 1938, Table 20.

rates and death rates remain in operation. A group char-
acterized by such a rate is said to be exactly reproducing
itself on a permanent basis.

The interpretation of reproduction rates for socio-economic
classes must be made with the realization that women do
not remain in the same socio-economic position throughout
the childbearing ages. This lack of fixity is perhaps more

TABLE 43.—*Gross and net reproduction rates in 1935 and their relative variations by
annual family income and educational attainment. Urban-white females of
childbearing age in the Health Survey*[1]

Income Status and Educational Attainment	Reproduction Rates		Relative Variations[2]	
	Gross	Net	Gross	Net
Annual Family Income				
$3,000 and Over..................	.46	.42	57	60
2,000–2,999.....................	.61	.55	75	79
1,500–1,999.....................	.70	.63	86	90
1,000–1,499.....................	.86	.75	106	107
Under $1,000 and Total Relief.....	1.17	.96	144	137
Total Relief.........	*1.43*	*1.15*	*177*	*164*
Educational Attainment				
College...................... ...	.57	.52	70	74
High School....................	.77	.68	95	97
7th–8th Grades..................	1.00	.86	123	123
Under 7th Grade.................	1.18	.97	146	139
Total Population......	.81	.70	100	100

[1] Adapted from: Karpinos and Kiser, 1939, Tables 1 and 3, pp. 376 and 386.
[2] *See* p. 187, footnote 10.

pronounced with regard to such attributes as occupational
status, rental, and income than it is in respect to educational
attainment, but no socio-economic characteristic is as un-
changing as the attribute of race or nativity. In this con-
nection it should also be emphasized that although the
reproduction rates are often referred to as potential rates of
growth, their use in connection with socio-economic classes
does not presume to take into account changes resulting

from shifts in socio-economic status. The reproduction
rates simply afford a more or less general portrayal of po-
tential reproductivity of the various socio-economic groups
on the basis of existing age-specific fertilities.
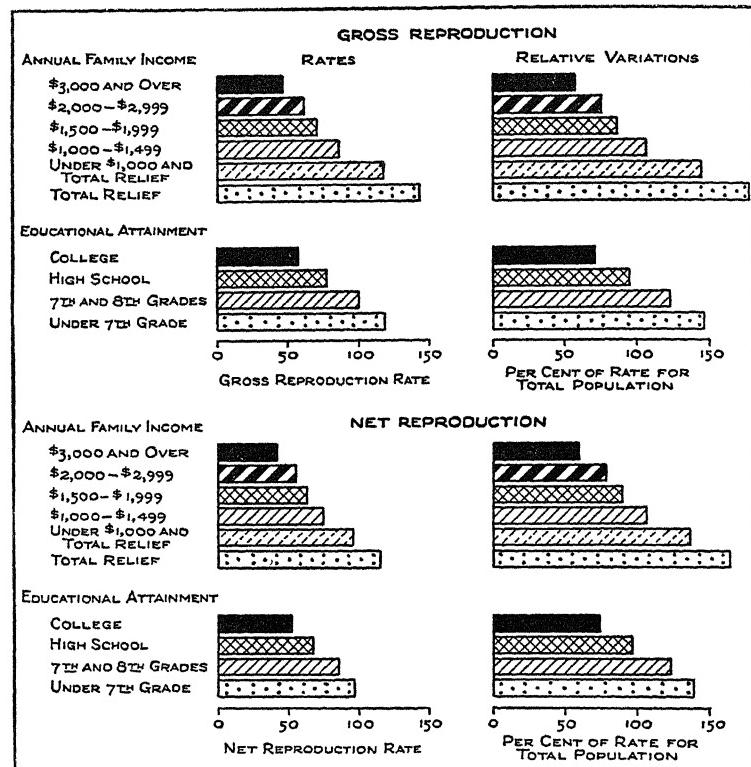
FIGURE 46.—*Chart indicating a consistent and marked inverse relation of gross and
net reproduction rates to income and educational status of urban-white females
in the Health Survey*
See Table 43.   Adapted from: Karpinos and Kiser, 1939, pp. 376 and 386

As indicated in Table 43 and Figure 46, the inter-class
divergencies and the total range of the net reproduction
rates of the surveyed urban white females by income and by
educational status were not quite so large as those exhibited
by the gross reproduction rate.   This is due to the fact that

mortality is more severe among the less privileged groups than among the upper classes. Nevertheless, the pattern of differentials for both types of reproduction rates was basically the same as that previously observed for the general fertility rates. The inverse association of net reproduction with income and educational status was consistent and sharp throughout the groups considered. In contrast to the equality of *marital* fertility rates observed for the two highest-income classes, the net reproduction rate was 31 per cent higher for females reporting family incomes of $2,000–2,999 than for those reporting incomes of $3,000 and over.

The actual heights of the net reproduction rates are of interest in themselves. The rate of .70 computed for the total urban white population includes a correction for under-representation of small cities in the *Survey*,[12] but none for under-enumeration of births. If it is assumed that there was an average of about 10 per cent under-enumeration of white births in the *Survey*, correction for this would yield a rate of about .78. Preliminary computations from 1940 Census materials have indicated a net reproduction rate of .76 for the total urban white population in this country.[13] Special care should be taken in the interpretation of net reproduction rates for different socio-economic classes, due to the complex of limitations previously discussed. It is significant to note, however, that according to these figures the urban whites in family-income brackets of "$3,000 and

[12] *See* Karpinos and Kiser, 1939, p. 383.

[13] Future Population Growth in the United States by Color and Urban-Rural Residence as Measured by the Net Reproduction Rate (Preliminary): 1940. United States Bureau of the Census, Series P-5, No. 4, February 21, 1941.

Note: As explained in the above release, the net reproduction rates were computed by the "indirect method" from the age structure of the population. The number of births was estimated from the number of children under 5 in the 1940 Census. Since these children were the survivors of births in 1935–1939, the reproduction rates for 1940 do not strictly apply to the Census date. It should also be noted that Mexicans were classified with whites in the 1940 Census.

Over" were characterized by a net reproduction rate of only .42, less than half the rate required for permanent population renewal.   On the other hand, the rate for women reporting family incomes short of $1,000 was just about the level required for replacement, whereas the relief recipients were characterized by an average rate 15 per cent in excess of replacement requirements.[14] On an educational basis, the computed net reproduction rate for urban white women of college status was a little over half that needed for permanent self-replacement, whereas the average rate for urban white females failing to attain 7th grade was just about sufficient for self-renewal of population on a permanent basis.

From data collected by the Federal Census of 1940 we may eventually have more comprehensive analyses of class differences in marital fertility and net reproduction than those afforded by the present materials.   These would afford a welcomed testing of the results procured from the Health Survey.

SUMMARY

Studies of the Health Survey materials and other recent investigations have suggested that class differences in the fertility of married women are tending to diminish.   One aspect of this is the apparent emergence of exceptions to the traditional inverse relation of marital fertility and socio-economic status.   The top classes no longer appear to be always characterized by lowest birth rates.

In contrast, the present chapter, drawn from an earlier and more detailed analysis, has indicated that there is still a strong and complete inverse relation between socio-economic status and *rates of general fertility* and *reproduction*. The general fertility rates and reproduction rates for classes

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[14] As noted in a previous chapter, selective factors are involved in the relatively high rate for relief recipients.

of "topmost" rank still fall in lowest position. This situation arises from class differences in proportions married, especially when younger ages of the childbearing span are considered.

The above findings do not detract from the significance of the changes that have taken place in differential marital fertility. The availability of different types of rates for the same population groups permits, rather, a more adequate understanding of what is involved. If, for instance, the marital fertility rates for the two upper-income groups are identical, we may infer that the differences between the general fertility rates for these two income classes arise entirely from differences in proportions married. Conversely, it appears clear that equality of marital fertility rates in the two upper-income groups does not signify equality in rates of general fertility or net reproduction.

The net reproduction rates computed for the surveyed urban white population were only .42 for the "$3,000 and Over" income class and only .52 for the college group. The rate was .96 for the "Under $1,000 and Total Relief" group, 1.15 for the relief recipients considered separately, and .97 for women of "Under 7th Grade" status. Due to limitations described in the text, the magnitude of the net reproduction rates for the various classes cannot be closely interpreted. If some allowance for under-enumeration of births is made, it would appear that the net reproduction rates among urban whites in the most privileged income and educational groups represented here, stand at about half the level required for permanent replacement through births. The poorest and least educated urban white groups are apparently not characterized by the very high reproduction rates commonly found in *rural* problem areas, but their rates are sufficient for, or somewhat in excess of, the requirements for replacement on a permanent basis.

DIFFERENTIAL MARITAL FERTILITY IN SELECTED RURAL AREAS AND VILLAGES OF THREE STATES

THE original plans for the Health Survey included no provision for studies in rural areas. In order not to be entirely lacking in rural data, however, it was later decided to carry out supplementary investigations within purely rural and rural-village areas of sixteen counties in Georgia, three counties in Missouri, and four counties in Michigan. Obviously, such samples were not intended to be representative of our total rural population. In Georgia, the sample was chosen with the aim of securing fair representativeness of the rural part *of that State*.[1] For Missouri and Michigan, however, the samples were more restricted

[1] The counties chosen for study in Georgia were Burke, Calhoun, Clinch, Coffee, Decatur, Elbert, Glynn, Hancock, Jackson, Macon, Morgan, Polk, Tattnall, Troup, Whitfield, and Wilcox. According to descriptions of the procedure, funds were allotted for the collection of 12,000 family schedules in the Georgia supplementary study. It was arbitrarily decided: (1) to procure 750 family schedules from each of sixteen selected counties; (2) to attempt a complete canvass of incorporated villages under 500 population (in 1930) within these counties; and (3) to procure from surrounding purely rural areas the number of additional schedules required to yield 750 for the county. For advance estimates of the number of households in specific rural villages, the 1930 Census populations were divided by five. The purely rural areas were selected by reference to maps showing the boundaries and populations of the 1930 Census Enumeration Districts. Assuming five persons per household, the Enumeration Districts selected were those which in combination, and with complete enumeration, would yield the number of family schedules required to complete the quota, 750, for the county. For further description of the Georgia rural study, *see* National Health Survey: Manual of Instructions for County Supervisors. Georgia Rural Public Health Survey, H.S.-R.G. Form 11, 1935, 13 pp.

with regard to locality and were not intended to be representative even of the rural parts of those States.[2]   This lack of representativeness should be kept in mind.   Nevertheless, the data are believed to be of value in that they afford suggestive indications of certain internal differentials in fertility.

By Census definition, the term "rural" is applied to open-country or unincorporated areas and to incorporated villages under 2,500 population.   Strict adherence to this definition was not kept in selecting the present "rural" samples.   As previously stated (footnote 1), the village samples in Georgia were virtually restricted to places under 500 population.[3] The term "under 2,500" is a more accurate description of villages in that size-group in the Missouri and Michigan samples.   It should be noted, however, that three towns in Missouri and one in Michigan, ranging from 3,000 to 6,500 population, were also included in the study.[4]

In view of the above situations, the data have been classified by type of community for the three states combined and separately.   Following the conventional usage of the term "rural," the data are shown for the "purely rural" areas and "villages under 2,500" combined, as well as separately. Those for the towns 3,000–6,500 have been kept separate for comparative purposes.

The samples from the three states comprised a total of 16,089 native-white married women of childbearing age.   Of

[2] The three counties in the Missouri sample were Howell, Linn, and Livingston. Howell was selected as a Southern Ozark county and the two north Missouri counties were added as good agricultural areas.   The four counties in the Michigan sample were Crawford, Hillsdale, Otsego, and Roscommon.   Except Hillsdale, these counties are in the cutover region of Michigan; so the present rural sample for that State is probably weighted with families of low economic status and high levels of fertility.

[3] Of 43 rural villages enumerated in Georgia, only two had more than 500 inhabitants in 1930.   These were Broxton with 830 and Nicholls with 651.

[4] The towns in excess of 2,500 population were West Plains, Missouri (3,335); Marceline, Missouri (3,555); Brookfield, Missouri (6,428); and Hillsdale, Michigan (5,896).

these, 10,624, or 66.0 per cent, were enumerated in open-country areas; 3,002, or 18.7 per cent, in villages under 2,500 population; and 2,463, or 15.3 per cent, in small towns of 3,000–6,500 population. The Georgia sample yielded a total of 3,047 colored married women of childbearing age, of whom 2,663, or 87 per cent, resided in purely rural areas. There were too few foreign-white married women in the study for any of the three states, and too few colored wives in the Missouri and Michigan samples to permit their inclusion in the present analysis.

The schedule forms for the urban areas of the National Health Survey were also used in the supplementary rural study. Thus, the fertility data relate to live births during the year preceding enumeration[5] per 1,000 married women of childbearing age. All rates were standardized for age[6] and were computed for available classifications by state, type of community, color, occupational class of the head, and educational attainment of the wife. No provisions were made for securing adequate data on income from farm families. As will be noted later, the lack of a special schedule also introduced certain limitations in the occupational classifications.

COMPARISONS BY STATE, COLOR, AND TYPE OF COMMUNITY

Before turning to the data for socio-economic classes, the marital fertility rates by state, color, and type of community may be briefly examined (see Table 44). For comparisons by state it will be noted that the fertility rates for native-white wives residing in purely rural areas were about the same in Georgia and Michigan (152 and 151, respectively), but relatively low (132) in Missouri. Among native whites

[5] The time reference was the same as that for the National Health Survey, approximately the calendar year of 1935.

[6] The age standard was the same as that used for marital fertility rates throughout earlier chapters, i.e., the age distribution of all married women 15–44 in the United States, as computed from the 1930 Census.

in villages under 2,500, the rate was highest in Michigan and lowest in Missouri, but the rate for Missouri was not much below that for Georgia. For the several towns of 3,000–6,500 population the rate was considerably higher in the Michigan than in the Missouri group. These data by state, however, are given merely for the background considerations of the present sample. The high position of the rate for Michigan cannot be regarded as typical of the State, but is doubtless due simply to the nature of the sample

TABLE 44.—*Fertility rates in 1935 among native-white and colored wives of child-bearing age in the supplementary rural survey; by state and type of community*

Rates standardized for age

Color of Wife and State of Residence	Live Births per 1,000 Wives				Number of Wives			
	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500
Native White								
Three States.............	137	144	112	91	13,626	10,624	3,002	2,463
Georgia..................	142	152	107	—	4,536	3,547	989	—
Missouri.................	129	132	100	86	5,119	4,255	864	1,765
Michigan................	144	151	125	104	3,971	2,822	1,149	698
Colored								
Georgia..................	135	139	107	—	3,047	2,663	384	—

(footnote 2). More adequate comparisons by state may be found in official data.[7]

The comparisons by color must be restricted to the Geor-

[7] According to preliminary figures from the 1940 Census for the period 1935–1940, the rural-farm net reproduction rates per 100 white females in the three states were: Georgia, 140; Michigan, 129; and Missouri, 128. For nonfarm rural whites (chiefly in villages under 2,500), the rates were: Georgia, 103; Michigan, 136; and Missouri, 105. *See:* Net Reproduction Rates by States (Preliminary), 1940. U. S. Bureau of the Census, Series P-5, No. 13, August 23, 1941, p. 7. It should be borne in mind, of course, that the net reproduction rates are affected by proportions married, whereas marital fertility rates are not.

gia samples.   The fertility rate for colored wives enumerated in purely rural areas of that State was 9 per cent lower than that for native-white wives in similar areas.   In villages under 2,500 (chiefly under 500 in the Georgia sample), the rates for the native-white and colored wives were about the same.   It is quite possible that for both types of communities the rates for the colored wives would surpass those for whites if adjustments were made for under-enumeration of births.[8]

As expected, the general levels of the fertility rates for both white and colored wives in purely rural areas were considerably higher than those observed in previous chapters for urban wives.   The point of interest in Table 44 is the striking reduction in fertility as one proceeds from the purely rural areas to the villages under 2,500, to the small towns of 3,000–6,500.   This held true in each of the two states for which the three types of communities were represented.   In Georgia, although the surveyed villages were mainly under 500 population, the rate for native whites in those small places was 30 per cent lower than for native whites in the surrounding open-country districts.   The fertility rate of colored wives in Georgia rural villages was 23 per cent below that for colored wives in purely rural areas. In the Missouri and Michigan villages under 2,500, the fertility rates of native-white wives were lower than those for

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[8] According to a preliminary release from the Bureau of the Census (*see* footnote 7), the net reproduction rate for the rural-farm colored population in Georgia was 9 per cent higher than for the rural-farm white population. This is in contrast to the order of the *marital* fertility rates secured in the present study when the data were restricted to *agricultural families* in purely rural areas of Georgia. With this restriction the rate for colored wives was 14 per cent below that for native-white wives. The reproduction rates, however, included corrections for under-enumeration, presumably greater for the colored than for the whites. Furthermore, it must be kept in mind that the higher reproduction rates for the colored than for the whites also accrue partly from earlier marriages and from relatively high rates of illegitimacy. The two latter factors have little bearing on marital fertility rates during one year, standardized for age.

open-country areas by 24 and 17 per cent, respectively. Whether or not disparities between fertility rates in purely rural areas and those in rural villages were actually wider in Georgia than in the other two states, the striking indication is that even cross-road rural villages of fewer than 500 inhabitants were apparently characterized by fertility rates well below those of dwellers in purely rural areas.

CLASS DIFFERENCES IN MARITAL FERTILITY RATES OF NATIVE WHITES

By Occupational Class of the Head. Following the system used in the regular Health Survey, the grouping of specific occupations into broad classes (professional, business, skilled and semiskilled, unskilled and servants, farmers, and farm laborers), was based on Dr. Alba M. Edwards' classification of 1930 Census occupations.[9] That code provided only a twofold division of agricultural families: farmers, and farm laborers. The schedule forms themselves, being the same as those used in cities, contained no provision for recording tenure of farms among "farmers". They did contain a question concerning tenure of home. On the assumption that farmers owning their homes and farmers renting their homes are virtually equivalent to farm owners and farm renters, respectively, the farmers (exclusive of farm laborers) were subdivided by tenure of *home* in the tabulations. The tabulations indicated, however, that whereas tenure of the home had been recorded for 95 per cent of the native-white wives of farmers in the Michigan sample and by 99.8 per cent of those in Missouri, this information was supplied by only 39 per cent of the native-white and 26 per cent of the colored wives of farmers in the Georgia survey. Subsequent investigation revealed that whereas the enumerators in the Michigan and Missouri surveys had been requested to record the

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[9] As previously stated, some of the above classes are consolidations of more detailed groupings afforded by the original coding.

facts of tenure of dwelling for farm families, those in Georgia —under different supervision—had been instructed that the question need not be asked.[10]   Thus, in the present analysis fertility rates are shown for farmers and farm laborers in the Georgia and combined samples.   They are shown for farm owners, farm renters,[11] and farm laborers in the Missouri and Michigan samples.

The distinction between agricultural and nonagricultural populations afforded some interesting comparisons.   Within limits imposed by small numbers, it permits analyses of differential fertility among nonagricultural families in purely rural and village areas, comparisons between agricultural and nonagricultural classes within purely rural areas, and comparisons by type of community in the birth rates for specific classes.

As indicated in Table 45 and Figure 47, an inverse relation of marital fertility rates and occupational status of the nonfarm groups was generally found within purely rural areas as well as in villages under 2,500 population.   This held true for the three states when combined or considered separately. The rate for the small professional group did surpass that for the business class in the purely rural areas.   Although this type of exception had its counterpart in urban data (Chapter III), the rural data are not sufficiently adequate to yield reliability on this point.   Likewise, the higher rate for the professional than for the business class and the relatively low rate for the unskilled class in the limited sample from towns of 3,000–6,500 population might have been erratic results of small samples.[12]

[10] Letter (May 20, 1939) from Mr. Rollo H. Britten of the United States Public Health Service, quoting rulings issued to field workers in the Georgia *Rural Survey* on November 2, 1935.

[11] Although the terms "farm owners" and "farm renters" will be used in this chapter, it will be understood that tenure refers to the dwelling.

[12] Differences ± σ differences in the fertility rates for occupational classes of adjacent rank are given below, by type of community.   The data are shown for

Whatever these situations may be, the outstanding point of interest is that the inverse relation between fertility rates and occupational status of nonfarm families was found even in the purely rural areas, at least in so far as the business, skilled, and unskilled classes are concerned.[13] To the writer's knowledge, this particular type of relationship in open-country areas has not been previously documented.

With respect to agricultural families in purely rural areas the fertility rates for farm laborers were conspicuously higher than those for farmers. In the two states for which the

separate states when those for the three states combined indicated differences larger than 2 σ of the differences. With the reservations described on p. 62 (footnote 25a), the italicized figures may be regarded as significant differences.

Classes Compared	Difference $\pm$ σ Difference of Fertility Rates			
	Purely Rural and Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500
Three States				
Professional–Business	*2 ± 18.7	*28 ± 29.4	12 ± 23.9	*5 ± 25.9
Business–Skilled	32 ± 9.9	38 ± 14.3	21 ± 13.8	30 ± 13.3
Skilled–Unskilled	12 ± 13.4	10 ± 17.0	12 ± 21.9	*26 ± 19.8
Farmers–F. Laborers	21 ± 13.5	38 ± 14.6	*60 ± 34.2	
Georgia				
Business–Skilled	41 ± 16.3	22 ± 22.0		
Farmers–F. Laborers.	6 ± 22.3	22 ± 24.5		
Missouri				
Business–Skilled	20 ± 18.2	45 ± 25.5		15 ± 15.4
Farmers–F. Laborers	36 ± 21.1	72 ± 22.9		
F. Owners–F. Tenants..		26 ± 12.1		
F. Tenants–F. Laborers.		62 ± 24.3		
Michigan				
Business–Skilled....	27 ± 17.2	39 ± 27.4		68 ± 26.4
Farmers–F. Laborers	17 ± 28.8	32 ± 30.9		
F. Owners–F. Tenants........... . .		12 ± 18.4		
F. Tenants–F. Laborers.		30 ± 33.2		

* The first-mentioned occupational class of the two compared had the higher birth rate. In cases not marked with an asterisk the second-mentioned class had the higher birth rate. *See* Table 45.

[13] It should be pointed out that some of the nonfarm families doubtless earned their livelihood in surrounding villages and cities; others had nonfarm occupations or businesses near their rural domiciles.

TABLE 45.—*Fertility rates in 1935 among native-white wives of childbearing age in the supplementary rural survey; by occupational class of the head, state, and type of community*

Rates standardized for age

State and Occupational Class	Live Births per 1,000 Wives				Number of Wives			
	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500
Three States—Total.........	137	144	112	91	13,626	10,624	3,002	2,463
Professional	99*	128*	82*	77*	298	124	174	119
Business................	97	100	94	72	1,717	817	900	798
Skilled and Semiskilled....	129	138	115	102	2,680	1,578	1,102	1,099
Unskilled...............	141	148	127*	76*	844	572	272	276
Farmers[1].....	146	146	131		7,131	6,751	380	73
Farm Laborers..........	167	184	71*		776	655	121	42
Unknown.......					180	127	53	56
Georgia—Total.	142	152	107		4,536	3,547	989	
Professional	—	—	—		73	35	38	
Business	87	112	61*		593	331	262	
Skilled and Semiskilled....	128	134	113		1,049	743	306	
Unskilled	153	168*			308	234	74	
Farmers[1]...	159	162	133*		2,152	1,914	238	
Farm Laborers..........	165	184*			314	262	52	
Unknown.........					47	28	19	
Missouri—Total..	129	132	100	86	5,119	4,255	864	1,765
Professional	87*	—			101	44	57	64
Business	89	70*	103*	77	519	242	277	596
Skilled and Semiskilled....	109	115	97*	92	574	311	263	762
Unskilled	127*	142*	115*	74*	276	159	117	228
Farmers[1].	133	134			3,284	3,194	90	45
Farm Owners[2]..........	*119*	*118*			*1,461*	*1,424*	*37*	*15*
Farm Renters[3]..........	*143*	*144*			*1,818*	*1,765*	*53*	*30*
Unknown Tenure					*5*	*5*	*0*	*0*
Farm Laborers.........	169*	206*			289	245	44	34
Unknown.....					76	60	16	36

* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

[1] Exclusive of farm laborers.

[2] *I.e.,* farmers owning their homes.

[3] *I.e.,* farmers renting their homes.

TABLE 45.—*Concluded*

State and Occupational Class	Live Births per 1,000 Wives				Number of Wives			
	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500
Michigan—Total....	144	151	125	104	3,971	2,822	1,149	698
Professional	81*				124	45	79	55
Business	114	120*	110	58*	605	244	361	202
Skilled and Semiskilled...	141	159	123	126	1,057	524	533	337
Unskilled........... ..	162*	146*			260	179	81	48
Farmers[1]................	152	151			1,695	1,643	52	28
Farm Owners[2]....... .	*139*	*141*			*943*	*920*	*23*	*14*
Farm Renters[3].........	*157*	*153*			*662*	*635*	*27*	*14*
Unknown Tenure.......					*90*	*88*	*2*	*0*
Farm Laborers..........	169*	183*			173	148	25	8
Unknown...............					57	39	18	20

farmers, exclusive of farm laborers, could be subdivided by tenure, there was found the traditional situation of lowest birth rates for the farm owners, next for farm renters, and highest for farm laborers.[14]

Within the purely rural areas the rate for native-white wives of all agricultural men (farmers and farm laborers) was 150, a rate 15 per cent higher than that for nonagricultural families (131). Figure 47 plainly indicates the existence of two distinct, if somewhat overlapping, ranges of the rates for subdivisions of the nonagricultural and agricultural families. The evidence is not clear regarding the point of overlap;[15] but it can be said with assurance that the lowest and highest rates for the agricultural families were, respec-

[14] *See* footnote 12 for tests of significance of difference.

[15] Previous comparisons between fertility rates for specific agricultural and nonagricultural classes have generally been those between rural areas and large cities. Thus, the analysis of 1910 Census data by Sydenstricker and Notestein indicated that the lowest rural rate (that for farm owners) was higher than the
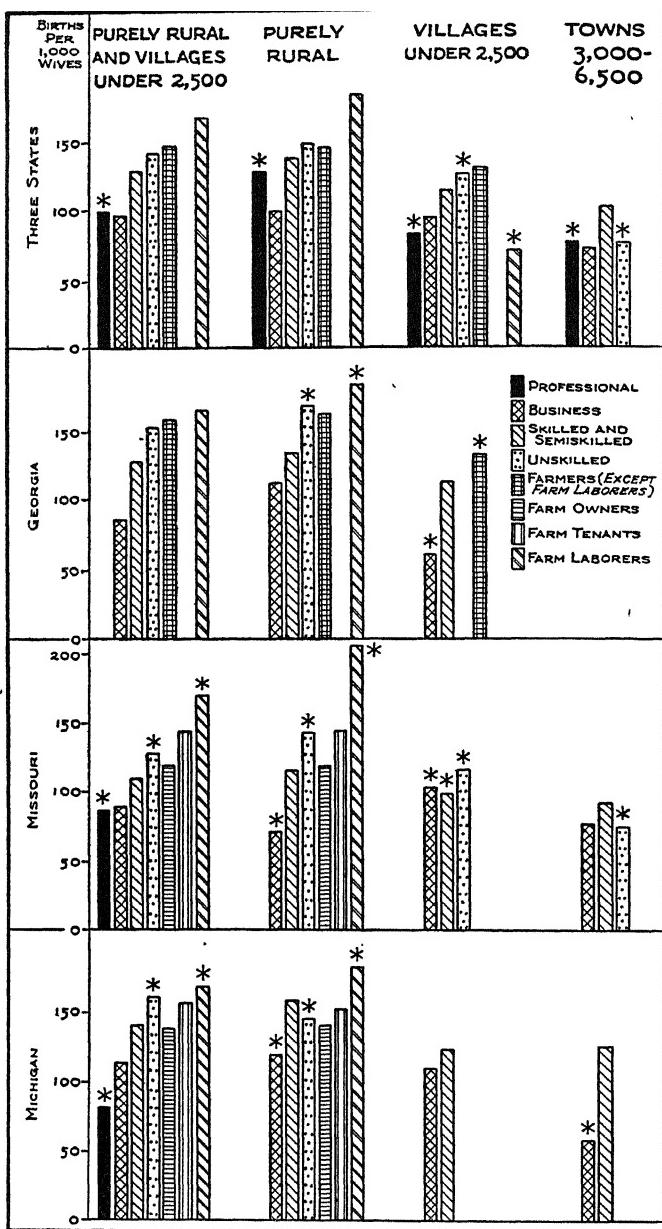
FIGURE 47.—*Occupational class of the head in relation to fertility rates in 1935 among native-white wives 15–44 years of age enumerated in purely rural areas and small rural communities of three states*

Rates standardized for age. *See* Table 45.

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

tively, higher than the lowest and highest rates among non-agricultural families.[16]

The inclusion of nonfarm workers in the purely rural samples affords some interesting comparisons by type of community. Class for class, the fertility rates for specific nonfarm occupational groups tended to be 'highest in the purely rural areas and lowest in towns of 3,000–6,500 population. Those in villages with fewer than 2,500 population fell in central position. The differences were frequently small in relation to the standard errors,[17] but the consistency

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highest urban rate (that for unskilled laborers). The present data for Missouri and Michigan suggest that when such analyses are restricted either to purely rural areas, or to purely rural and under 2,500 combined, the rate for farm owners falls below that for the unskilled class, if not below that for the skilled. *Cf.* Sydenstricker and Notestein, 1930, p. 29.

[16] Within the purely rural samples for the three states combined, the fertility rate for farmers (exclusive of farm laborers) surpassed that for each nonagricultural class except the unskilled laborers. The above also held true in the Georgia and Missouri samples considered separately. In the Michigan purely rural sample, the rate for farmers was higher than that of unskilled laborers but not so high as that for skilled and semiskilled workers. The reliability of the comparisons for specific states, however, is sharply limited by the small sizes of certain samples.

[17] The differences $\pm \sigma$ differences are presented below between fertility rates for native-white wives of the same nonfarm class but living in different types of communities. The data are given for separate states in cases where those for the three states combined yielded differences larger than 2 σ of the differences. Differences of this magnitude are shown in italics. (*See* p. 62, footnote 25a.)

Community Sizes Compared	Difference $\pm \sigma$ Difference of Fertility Rates			
	Professional	Business	Skilled	Unskilled
Three States				
Purely Rural–Villages...............	46 ± 35.1	6 ± 14.3	23 ± 13.2	21 ± 25.6
Purely Rural–Towns.........	51 ± 40.6	*28 ± 14.0*	*36 ± 13.0*	*72 ± 24.5*
Villages–Towns....................	5 ± 32.8	22 ± 13.5	13 ± 13.2	51 ± 26.2
Missouri				
Purely Rural–Towns............. ..		7 ± 20.2	23 ± 20.1	*68 ± 31.5*
Michigan				
Purely Rural–Towns.......		*62 ± 27.5*	33 ± 24.7	

of the results is in line with the logic of this type of relation-
ship. It may also be noted that although the fertility rate
for the few farmers (owners and tenants) residing in villages
was higher than that for nonagricultural classes in villages,
it was lower than that for farmers in purely rural areas. In
general, therefore, the data have afforded some refinements
of the well-known principles of (1) high birth rates in rural
areas, and (2) high birth rates among agricultural families.

By Educational Attainment of the Wife. The fertility rates
by educational attainment of native-white wives are shown
in Table 46 and Figure 48. There was a fairly consistent
tendency for the rates to increase with lowering of educa-
tional attainment. In some of the subdivisions the rates for
wives of college attainment were actually higher than those
for wives of high school status, but these may well have been
erratic results of small samples. In the consolidated data
for purely rural, and village areas, upper left of Figure 48,
the average rate for the wives of college attainment was
only a little below that for wives of high school status. In
this combined group, too, the lower rate for wives of high
school status than that for wives reporting 7th or 8th grade
schooling was of borderline significance.[18] In this instance,
however, the consistency of the results in the various sub-
divisions attests to the reality of the lower rate for the high
school group.

There appeared to be no consistent difference by state or
by type of community in the pattern of variations in fer-
tility rates along educational lines. Similar to the situation
with respect to occupational classes, however, was the gen-
eral lowering of the fertility rates for given educational
classes with decreasing rurality. Among wives of high
school status in the Missouri sample, the rates were 129, 92,

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[18] Differences $\pm \sigma$ differences between rates for native-white wives in consecu-
tive educational classes are given below, by type of community. The data are
shown for separate states when those for the three states combined indicated

and 74 for those in purely rural areas, villages under 2,500, and towns of 3,000–6,500, respectively. In Michigan the three rates were 129, 117, and 88. The exceptions found in the states considered separately were generally results based on fewer than 300 cases.

A detailed subdivision was made for the native-white wives in the Georgia purely rural group who reported less than high school attainment. The fertility rates are given in a later section (Table 47), where they can be readily compared with those for corresponding groups of colored wives. The comparisons by color are discussed later, but it may be noted here that among native-white wives in purely rural areas of Georgia, fertility rates of essentially equal magnitude were observed for the "Under 4th," 5th, 6th, and 7th grade groups. The rate for the "8th Grade" group was relatively low and that for the "4th Grade" group was relatively high. The rates for the "Under 4th," 4th, and 8th

differences larger than 2 σ of the differences. Italicized figures are used for differences larger than 2 σ. (*See* p. 62, footnote 25a.)

Classes Compared	Difference ± σ Difference of Fertility Rates			
	Purely Rural and Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500
Three States				
College–High School	5 ± 10.6	*1 ± 13.5	10 ± 17.1	*22 ± 16.8
High School – 7th–8th Grades..	13 ± 6.6	10 ± 7.6	11 ± 14.0	*29 ± 13.0*
7th–8th Grades–Under 7th Grade	*34 ± 9.5*	*35 ± 10.4*	27 ± 23.0	
Georgia				
High School – 7th–8th Grades	10 ± 13.0			
7th–8th Grades–Under 7th Grade	*29 ± 14.5*	23 ± 16.2		
Missouri				
High School – 7th–8th Grades..............	6 ± 10.2			24 ± 14.4
7th–8th Grades–Under 7th Grade.........	*46 ± 19.4*	*43 ± 20.9*		
Michigan				
High School – 7th–8th Grades	*33 ± 12.4*			*83 ± 30.6*
7th–8th Grades–Under 7th Grade.......... .	*67 ± 27.3*	*73 ± 31.0*		

* The higher educational class of the two compared had the higher fertility rate. In other cases the opposite type of relation was observed. *See* Table 46.

TABLE 46.—*Fertility rates in 1935 among native-white wives of childbearing age in the supplementary rural survey; by educational attainment of the wife, state, and type of community*

Rates standardized for age

State and Educational Attainment	Live Births per 1,000 Wives				Number of Wives			
	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500	Purely Rural and Villages Under 2,500	Purely Rural	Villages Under 2,500	Towns 3,000–6,500
Three States—Total..........	137	144	112	91	13,626	10,624	3,002	2,463
College	120	133	97	101	1,167	759	408	342
High School..............	125	132	107	79	5,672	4,104	1,568	1,243
7th–8th Grades...........	138	142	118	108	4,825	4,089	736	787
Under 7th Grade..	172	177	145*	—	1,955	1,666	289	91
Unknown............. ..					7	6	1	0
Georgia—Total.............	142	152	107		4,536	3,547	989	
College........	120*	148*	86*		275	155	120	
High School	128	137	103		1,755	1,285	470	
7th–8th Grades...........	138	148	95*		1,111	910	201	
Under 7th Grade..	167	171	147*		1,389	1,192	197	
Unknown...........					6	5	1	
Missouri—Total...	129	132	100	86	5,119	4,255	864	1,765
College	99	108	75*	108*	436	329	107	189
High School.......... ...	121	129	92	74	1,867	1,443	424	841
7th–8th Grades....	127	129	113*	98	2,465	2,179	286	655
Under 7th Grade.....	173	172	—	—	351	304	47	80
Unknown...					0	0	0	0
Michigan—Total......	144	151	125	104	3,971	2,822	1,149	698
College....	143	153*	124*	91*	456	275	181	153
High School......	125	129	117	88	2,050	1,376	674	402
7th–8th Grades...	158	161	144*	171*	1,249	1,000	249	132
Under 7th Grade....... .	225*	234*	—	—	215	170	45	11
Unknown.....					1	1	0	0

* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

grade groups, however, were each based upon fewer than 300 cases.
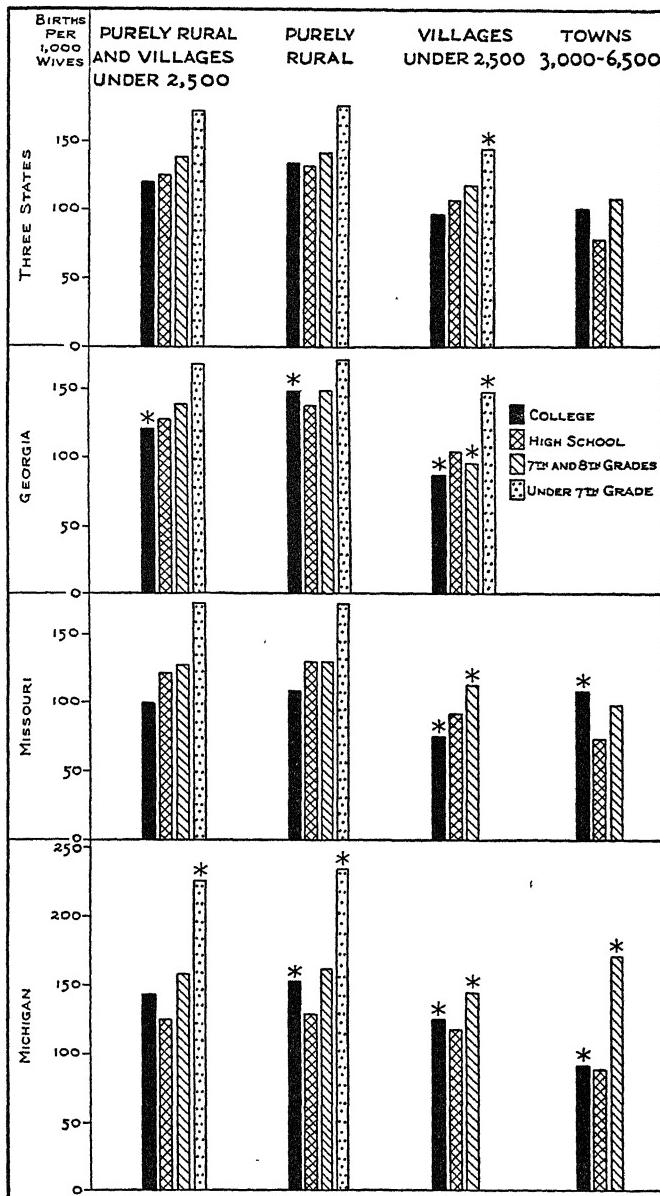
FIGURE 48.—*Educational attainment in relation to fertility rates in 1935 among native-white wives 15–44 years of age enumerated in purely rural areas and small rural communities of three states*

Rates standardized for age.   *See* Table 46.

* Rate based on 100–299 wives.   Rates based on fewer than 100 are not shown.

CLASS DIFFERENCES IN MARITAL FERTILITY RATES OF
NEGROES IN RURAL AREAS OF GEORGIA

As previously stated, only in Georgia were Negroes en-
countered in sufficient numbers in the supplementary rural
survey to justify inclusion in the present analysis.   In that
area 3,047 colored wives of childbearing age were enumer-
ated, and of these only 384 were residents of villages.   Thus,
the analysis of fertility differentials by socio-economic at-
tributes is restricted to 2,663 purely rural residents.   Fur-
thermore, the opportunity to investigate class differences in
fertility rates within this group was sharply limited by con-
centrations of the sample along occupational and educational
lines.   By occupation of the head, approximately half of
the colored wives were classified simply as farmers and an
additional fourth as farm laborers.   With respect to educa-
tion, about four-fifths fell into the "Under 7th Grade" class.
(*See* numerical distribution in Table 47.)

The socio-economic status of the colored wives in the
purely rural samples of Georgia compared quite unfavorably
with that of whites in the same areas.   Although the propor-
tionate importance of "farmers" was about the same for the
two groups, it is safe to assume that the Negro farmers were
in larger proportions tenants and sharecroppers than were
the whites.[19]   The proportionate importance of unskilled
laborers and of farm laborers was approximately three times
greater among Negroes than among whites.   The distribu-
tions by educational status give the same story.   The
amount of formal schooling reported in the purely rural areas
reflects the meager educational opportunities afforded the
rural whites as compared with the urban whites.   The re-
ported schooling of the Negro wives in the Georgia country-

[19] As previously stated, the data for Georgia permitted no satisfactory sub-
division of farmers by tenure of home.

side was even poorer. Only 6 per cent of the Negro wives enumerated in the purely rural areas of Georgia advanced beyond common school as compared with 41 per cent of the

TABLE 47.—*Fertility rates in 1935 among native-white and colored wives of childbearing age enumerated in purely rural areas of Georgia; by occupational and educational characteristics*

Rates standardized for age

Socio-Economic Attributes	Births per 1,000 Wives		Number of Wives	
	Native White	Colored	Native White	Colored
Total.............................	152	139	3,547	2,663
Occupation of Head				
Professional	—	—	35	9
Business	112	—	331	6
Skilled and Semiskilled...	134	166*	743	109
Unskilled......	168*	123	234	447
Farmers..	162	155	1,914	1,358
Farm Laborers.	184*	119	262	709
Unknown...........			28	25
Education of Wife				
College........	148*	—	155	· 6
High School........	137	91*	1,285	158
7th–8th Grades	148	178	910	373
Under 7th Grade....	171	137	1,192	2,106
Unknown.. ....·..			5	20
8th Grade......	123*	—	273	62
7th Grade.	156	191	637	311
6th Grade.................... ...	150	131	406	436
5th Grade.....	148	132	381	623
4th Grade....	250*	135	277	648
Under 4th Grade............. ...	152*	147	128	399

* Rate based on 100–299 wives. Rates based on fewer than 100 are not shown.

native-white wives in the same areas and 65 per cent of the native-white wives in the total urban areas of the National Health Survey (Table 18).

The available data on differential fertility of Negroes in the purely rural areas of Georgia, together with comparable material for whites, are presented in Table 47. Despite their limitations, the fertility rates by occupational class are of some special interest. In contrast to the situation among whites, the lowest rates observed among Negroes were those for farm laborers and unskilled nonfarm laborers. The actual rate for colored skilled and semiskilled workers was quite high, but it was based upon such a small sample that the skilled-unskilled difference cannot be accepted as trustworthy.[20] The higher fertility rate for colored farmers than for colored farm laborers, however, did stand up as statistically significant. One factor to keep in mind, in so far as the present data are concerned, is that the Negro "farmers" in the sample were doubtless mainly tenants and sharecroppers and their economic position was probably little better than that of farm laborers hired by the day.

The narrow range of school attainment reported by colored wives in the purely rural areas of Georgia delimits the value of the fertility differentials by education. The lowest fertility rate was found for the small group reporting high school status, Table 47. Although this result is in line with expectations, the statistical unreliability of the rate should be kept in mind. The actual rate for colored wives of 7th–8th grade status was much higher than that for wives reporting less than 7th grade. The data for specific grades, however, tend to cast doubt on the reality of this situation. The rate for wives reporting 7th grade was conspicuously high and was possibly a chance variation. The subdivision of the "Under 7th Grade" group suggested virtual similarity in the fertility rates for wives of 4th, 5th, and 6th grade status. The average rate for the wives reporting less than 4th grade,

[20] It will be recalled that in the *Survey* data for urban colored married women (Table 12), the fertility rates for skilled and unskilled groups were virtually the same. In the group of Southern towns under 25,000 population, however, the average rate for the unskilled class fell below that for the skilled class (Table 17).

however, was about 11 per cent higher than the average for wives of 4th–6th grade level.   To some extent, therefore, as among urban Negroes (Figure 17), systematic variations in fertility rates by educational status appeared to be absent except in so far as the extremes were concerned.

The problem of small numbers hinders the attempt to compare, by color, the rates for wives of the same occupational or educational class.   Farmers (exclusive of farm laborers) formed the largest white and colored groups, and among these there was little difference by color in the observed fertility rate.   In this case, of course, internal distributions by tenure or income, if available, would doubtless show marked differences in economic status by color.   The actual rate for Negro unskilled laborers was 27 per cent lower than that for white unskilled laborers enumerated in purely rural areas of Georgia, and the rate for Negro farm laborers was 35 per cent below that for white farm laborers in the same areas.   In both cases, however, the samples for whites were particularly small.   By education, large numbers of both whites and Negroes were represented in the "Under 7th Grade" group, and the rate for colored wives of this class was about 20 per cent below that for comparable white wives, but it is possible that poorer enumeration of colored births accounted for much of the difference.   The under-enumeration of births and the limited size and localized nature of the samples should be kept in mind in all of the above comparisons.   It is hoped that more adequate analyses of differential fertility among rural whites and Negroes will eventually be available from the 1940 Census.

SUMMARY

The Health Survey included supplementary investigations in selected rural villages and purely rural areas of three states: Georgia, Missouri, and Michigan.   The family schedule forms were the same as those used in the urban

areas. Thus, tabulations of fertility data were secured for married women of childbearing age along demographic and socio-economic lines. These included 16,089 native-white wives in the three states and 3,047 colored wives in Georgia.

The comparisons by color were restricted to the native-white and colored groups in Georgia. The observed fertility rate for colored wives in purely rural areas of that State was found to be somewhat lower than that for whites, but the difference was small and might have been in the other direction if correction for under-enumeration of births had been made.

By type of community, fertility rates in purely rural areas surpassed those in villages under 2,500 population, and fertility rates in villages of this size were higher than those in towns of 3,000–6,500 population. In the Georgia sample the rural rate was considerably higher than that observed for villages under 500 population.

The tendency for marital fertility rates to decrease with decreasing rurality was found in each state and was fairly consistent when the comparisons were restricted to specific socio-economic classes.

Among native-white wives the inverse relation between fertility and occupational and educational status was manifested with a fair degree of consistency in the purely rural areas and in villages under 2,500 population in each state. As in the urban areas, some exceptions were found in the uppermost socio-economic classes. These, as well as other exceptions, however, may have been erratic results of small samples.

Several interesting situations emerged from the separation and subdivision of the farm and nonfarm native-white wives in purely rural areas. As a group, the former were more fertile during the *Survey* year than were the latter. With respect to internal variations in fertility, these groups exhibited two distinct but overlapping ranges. Within the nonfarm group the rate was generally lowest for the business

class and highest for the unskilled. Within the farm group the lowest rates were found for the owners and highest for farm laborers. The data afford no clear-cut indication of the point of overlap between the two series, but there was the suggestion that within purely rural areas the fertility rate was lower for wives of farm owners than for wives of nonfarm unskilled laborers. Whatever this situation may be, an important suggestion from these data is that even within purely rural areas the business, skilled, and unskilled classes fall into their familiar order with respect to fertility.

The analysis of class differences in the fertility of colored wives was restricted to the sample drawn from purely rural areas of Georgia, and this was handicapped by the limited stratification along socio-economic lines. Of chief interest were the suggestions of relatively low fertility rates among colored wives of unskilled and farm laborers, situations in contrast to those observed among whites in the same areas. By educational attainment, the small group of colored wives of high school level was characterized by a relatively low fertility rate. The subdivision of the "common school" group by specific grade, however, revealed little in the way of systematic variations in fertility.

The observed fertility rates for colored wives in purely rural areas of Georgia tended to be somewhat lower than those of white wives of similar residence and socio-economic classification. Divergence of this character was widest in the case of unskilled and farm laborers, but in these instances the validity of the comparisons was undermined by small numbers. For the larger groups of white and colored wives reporting "Under 7th Grade," the fertility rates of the colored wives was 20 per cent below that of white wives. Much of this difference may have been due to less adequate enumeration of colored than of white births. More adequate data than those afforded in the present study are needed for analyses of differential fertility in rural areas, particularly in so far as the colored populations are concerned.

PREGNANCY WASTAGE REPORTED IN THE HEALTH SURVEY

HE difficulty of securing detailed and trustworthy material on as personal a matter as pregnancy wastage has long been an obstacle to adequate study of this problem. The main sources of existing data are of two types: (1) federal reports based upon registration of live births and stillbirths, and (2) intensive studies of selected groups designed to ascertain the incidence of spontaneous and induced abortions as well as stillbirths.

The official data are now available for the entire country. Despite their comprehensive coverage, however, they are subject to several limitations. In the first place, they are nominally restricted to stillbirths, and hence afford no information on spontaneous or induced abortions, the important forms of wastage during early months of pregnancy. In the second place, the federal data are compilations from state registrations, and states vary in their interpretation of what constitutes a stillbirth. In about three-fourths of the states certification was required in 1935[1] either by law or by local ruling of the state board of health, if the fetus had advanced to a minimum period of the fifth or sixth month of uterogestation.[2] There were, however, a few radical departures.[3]

[1] The official data for the year 1935 were chosen as being most comparable with the Health Survey data. Due to the special inadequacies of the *Survey* data on pregnancy wastage, an unusual amount of space in this chapter is devoted to comparisons of *Survey* findings with results from official data and from specialized intensive studies of pregnancy wastage.

[2] This is based on the assumption that the required periods listed for some

216

Even if there were uniformity of definition, there would remain the question of the completeness of stillbirth registration. In official reports the incidence of stillbirths is commonly expressed as a ratio to live births, but since stillbirths are probably less completely recorded than live births, the published figures may understate the actual extent of this form of pregnancy wastage.

In the past, a limitation especially relevant to rural-urban comparisons of ratios of stillbirths to live births has been the practice of crediting births to the place of occurrence rather than to residence of the mother. Recently, however, the Division of Vital Statistics has begun "correction for residence," and it is believed that this limitation, as well as those arising from lack of uniformity of state registrations of stillbirths, will tend to diminish.[4]

In spite of their present shortcomings, the official data are believed to afford fairly dependable material concerning variations in ratios of stillbirths along certain demographic lines. Thus, from Table 48, prepared from 1935 data, it is

states as "4 months" are the same as those listed for other states as "advanced to fifth month" and that such similarity exists between "5 months" and "advanced to sixth month." For a summary of the situation in each state in 1935, see: Bureau of the Census: BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935, published in 1937, p. 15.

[3] In Maryland and New York City (but not in the remainder of New York State) certification was required of "any product of conception." In Nevada and Utah the designated period was "6 months," in Indiana "7 months and over," and in Washington "beyond the 7th month." In Delaware and New Hampshire there was "no definite ruling."

[4] The Bureau of the Census has continuously attempted to encourage complete and uniform vital statistics in the different states. In continuation of this effort, the Bureau, in cooperation with nonofficial organizations, has recently prepared a new Uniform Vital Statistics Act. The Act was approved by the Conference of Commissioners on Uniform State Laws on September 26, 1941. (Letter, December 19, 1941, from Dr. Forest E. Linder, Division of Vital Statistics, Bureau of the Census.) It is expected to be considered by the American Bar Association at its fall meeting in 1942. (Letter, May 26, 1942, from Dr. Halbert L. Dunn, Chief Statistician for Vital Statistics, Bureau of the Census.) If approved, it will be submitted as a model law for the various states.

clear that stillbirths were less frequent among whites than among "other races," less frequent among legitimate than among illegitimate births, and less frequent in rural areas than in cities.[5]   In data to be presented later it will also be seen that the ratios of officially registered stillbirths increased constantly with age of mother after the attainment of age 30.

TABLE 48.—*Stillbirths per 100 live births registered in the United States in 1935; by legitimacy, color, and type of community*[1]

Area and Color	Stillbirths Per 100 Live Births		
	Total	Legitimate	Illegitimate
United States..........	3.6	3.5	7.7
White	3.1	3.1	5.5
Other Races..........	7.0	6.5	9.6
Cities of 10,000 and Over.......	3.7	3.6	7.6
White	3.3	3.3	5.1
Other Races	7.6	6.9	10.9
Cities of 2,500–10,000	3.8	3.6	8.9
White	3.4	3.3	6.8
Other Races	8.4	7.7	11.4
Rural	3.5	3.3	7.6
White.........................	2.9	2.8	5.8
Other Races	6.5	6.1	8.5

[1] Adapted from: BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935. Department of Commerce, Bureau of the Census, Washington, Government Printing Office, 1937, p. 16.   Data are exclusive of Massachusetts and California since these states did not require a statement concerning legitimacy of child.

Specialized studies of pregnancy wastage have generally been carried out under auspices conducive to fairly complete reporting not only of stillbirths but also of spontaneous and

[5] The failure to correct for residence possibly minimized the rural-urban differences.   It is noted that there were no differences between average ratios for towns of 2,500–10,000 and of 10,000 and over.   Failure to correct for residence may be involved in this indicated lack of difference but, at all events, one would like to see more than a dual division of cities by size.

induced abortions.   Most of these have related to selected
groups of urban-white married women.   Several have been
by-products of studies of the prevalence and effectiveness of
contraception among patients of birth control clinics, or
patients of maternity hospitals.   In these and in other ap-
proaches, detailed pregnancy histories have been collected
by medical persons or by nurses.

 After careful appraisal of the results from various studies
of the above types, Wiehl came to the following conclusions:

"Total abortion rates for urban samples studied varied from 12.1 per
cent to 16.8 per cent; and the weight of evidence favors a rate of approxi-
mately 15 per cent of total pregnancies, or 18 abortions per 100 live and
stillbirths.

 "Spontaneous abortions were found to occur in 9 to 10 per cent of
pregnancies.

 "Illegal abortions reported varied from slightly less than 3 per cent to
8 per cent, 4 or 5 per cent of total pregnancies being the most probable
rate for married white women in the general population.

 "Limited data for rural communities suggest that abortions may be
somewhat less frequent in the rural areas."[6]

 [6] Wiehl, 1938, p. 88.

 It will be noted that the range of variation in the findings regarding induced
abortions was much greater than that for spontaneous abortions.   This situation
has been discussed in another review of the data (Stix and Wiehl, 1938, pp. 621–
623).   Some of the widest variations in the findings regarding induced abortions
were believed to be due to selective factors inherent in the nature of the samples
studied.   Lowest rates were generally found for patients of maternity hospitals
and relatively high rates for patients of birth control clinics.   Unduly low rates
of any form of pregnancy wastage, but especially of induced abortions, would be
expected among maternity hospital patients if there is failure to restrict the
analysis to pregnancies occurring prior to the one responsible for the current con-
finement.   Patients of birth control clinics, on the other hand, are manifestly a
select group in so far as desire to avoid conception is concerned.   If contraception
fails, there is the resort to induced abortion.   The above opposite types of bias
were taken into account in Wiehl's estimate of an average for urban-white mar-
ried women.

 Note: Beebe's recent studies have tended to confirm the above statement regard-
ing the lower frequency of abortions in rural than in urban areas.   Past or "pre-
enlistment" pregnancy histories were secured by nurses from women admitted to
birth control services sponsored by the National Committee on Maternal Health.

Although not commented upon in the above statement, the proportion of pregnancies terminating in stillbirths extended from 1.3 to 2.6 in the various studies reviewed. If one assumes that among urban-white groups an average of about 17 per cent of the pregnancies terminate in wastage, with 10 per cent in spontaneous abortions, 5 per cent in induced abortions, and 2 per cent in stillbirths, the figures may be stated as follows in terms of wastage per 100 live births: total wastage, 20.4; spontaneous abortions, 12; induced abortions, 6; and stillbirths, 2.4.[7]

Character and Limitations of the Survey Data. The *Survey* data on stillbirths and other forms of pregnancy wastage, like those concerning live births, relate to cases reported by married women of childbearing age for the twelve-month period preceding enumeration. There are certain limitations to the data which should be described at the outset. It should be emphasized that the Health Survey was not equipped for, nor primarily interested in, a detailed and specialized study of pregnancy wastage. Its primary objective was that of collecting data on morbidity in different elements of our urban population. The interest in pregnancy wastage was essentially the same as that in any other cause of illness.

The family schedule provided no separate section for pregnancy wastage. The data appeared in the illness section in

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In three samples of rural whites (drawn from selected rural localities of West Virginia, Tennessee, and Kentucky) spontaneous abortions comprised only 6 to 8 per cent of the reported pregnancy terminations, and induced abortions accounted for less than 1 per cent. (Beebe, 1942, Table 21.)

[7] The figure for stillbirths may be somewhat low. Despite incompleteness of registration, the official data for 1935 indicated an average ratio of 3.3 stillbirths per 100 live births among all urban whites. On the other hand, many of the states reported as stillbirths cases that would be classified as abortions in the specialized studies. In Stix's studies, for instance, the criterion of "stillbirth" was advancement beyond the 28th week of uterogestation, equivalent to 7 lunar months or advancement into the 7th calendar month. This criterion is in accord with the definition of abortions and miscarriages cited in Stander, 1936, p. 862.

which the enumerators were required to list all illnesses of a minimum seven-day duration during the preceding year, all illness encountered on the day of the visit, and all "confinements" and their terminations during the past year regardless of period of disability. Such provisions would appear to be fairly adequate for recording *stillbirths*, since this form of pregnancy wastage is not only a sequel to a confinement but is also generally accompanied by at least one week of incapacitation of the mother. The provisions were not sufficient to yield records of all abortions, however, since abortions occurring during early periods of pregnancy are not regarded as confinements and may not cause seven-day illness. Furthermore, the reluctance of women to report abortions or even stillbirths in a survey of this type is understandable, since many of the enumerators were men.

For all urban white married women in the *Survey* the pregnancy wastage reported for the previous twelve months amounted to about 7 cases per 100 live births. On the basis of the specialized studies (pp. 218–220), it would thus appear that only one-third to one-half of the pregnancy wastage actually experienced during the *Survey* year was reported.

Corroboration and some refinement of this estimate is afforded by a follow-up study carried out by Wiehl and Berry among New York women included in the *Survey* and reporting pregnancy terminations *within four months* prior to the enumerators' visits. The original schedules for New York yielded a total of 1,030 such women. A trained nurse experienced in obstetrical assistance and field work visited 860[8] of these and procured detailed information regarding not only the "last" pregnancy but also all previous terminations. Among the last pregnancies there was a total pregnancy wastage of 6.2 (with 1.4 stillbirths and 4.8 abortions) per 100

[8] All of the 1,030 addresses were visited, but 170 women had moved, were not at home on repeated visits, or refused to cooperate. *See* Wiehl and Berry, 1937.

live births.[9]   Quite different ratios were secured from the
analysis of pregnancy terminations prior to the last preg-
nancy.   The restriction to "previous" pregnancies afforded
a more random universe of experience, since the follow-up
sample was by nature deficient in cases of pregnancy wastage
in so far as the "last" pregnancy was concerned.   This was
due to the under-reporting of pregnancy wastage in the origi-
nal *Survey*.   For 1,525 "previous" pregnancies there was
found a gross ratio of 17.1 cases of wastage per 100 live
births, composed of 3.0 stillbirths, 10.5 spontaneous abor-
tions, and 3.6 induced abortions.   The data for New York
may not be representative of other cities in the *Survey*, but
they suggest that only about one-half of the stillbirths and
one-third of the abortions that occurred during the *Survey*
year were reported.[10]

Since stillbirths and abortions apparently were not re-
ported with equal degree of adequacy in the *Survey*, separa-
tion of the different forms of pregnancy wastage would have
been desirable for the present analysis.   The enumerators,
however, were not required to distinguish induced from spon-
taneous abortions and no provisions were made for recording
months of uterogestation.   Apparently for these reasons the
coding planners decided to combine all forms of pregnancy
wastage reported by the women during the *Survey* year.[11]

[9] Among the total 1,030 "last" pregnancies reported in the original *Survey*,
there were 7.2 cases of pregnancy wastage per 100 live births, with 1.4 stillbirths
and 5.8 abortions or miscarriages.

[10] More detailed estimates are not warranted, but examination of the records
secured in the New York follow-up study suggested that about half of the spon-
taneous abortions and from one-tenth to one-fifth of the induced abortions were
reported in the original *Survey* for that city.   This makes allowance for the possi-
bility, stated by Wiehl and Berry, that some induced abortions were reported as
spontaneous in the follow-up study.

[11] A code was devised for one-column coding of the number of live births *and*
the number of "stillbirths, miscarriages or abortions" experienced by the woman
during the year preceding enumeration.   As with live births, twin-born still-
births were coded as two, etc.

In this analysis of the *Survey* data, the incidence of re-
ported pregnancy wastage is expressed either as a ratio to
100 live births or as a percentage of reported pregnancy
terminations during the preceding year. Since the number
of live births during the year was somewhat less than one-
tenth the number of surveyed wives of childbearing age, the
data do not lend themselves to as detailed treatment as was
possible in studying rates of live births among married
women. The basic classifications in their order of presenta-
tion are those (1) by nativity, color, and age; (2) by region
and size of city; and (3) by selected socio-economic
attributes.

Pregnancy Wastage by Nativity, Color, and Age. The two
most marked types of variations in ratios of reported preg-
nancy wastage to live births were those by color and by age.
As shown in Table 49 (left section), there was a gross average
of 7.1 instances of pregnancy wastage for every 100 live
births during the year among native-white wives, 7.6 among
foreign-white wives, and 11.1 among colored wives. The
higher gross ratio for foreign-white than for native-white
married women, however, was due to differences in age-
composition. The ratios standardized for age[12] were 7.0 for
native whites, 6.8 for foreign whites, and 11.3 for the colored.
In subsequent references to average ratios of pregnancy wast-
age among surveyed wives 15–44 years of age, it will be
understood that such ratios are standardized for age.

As already noted (Table 48) the official registration data
for 1935 indicated much higher proportions of stillbirths
among "other races" than among whites. This was true in

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[12] The age standard used was the distribution of all legitimate live births (to
mothers 15–44 years of age) registered in the United States during 1935, by age
of the mother. This was computed from data in BIRTH, STILLBIRTH AND INFANT
MORTALITY STATISTICS, 1935, pp. 11 and 95. The necessity of using distributions
of births by age of mother is obvious if one relates wastage to live births for meas-
ures of incidence. The standard used for adjusting live birth rates would be
appropriate only if pregnancy wastage per wife were studied.

each type of community and for legitimate and illegitimate
births.   At the expense of losing the classifications of official

TABLE 49.—*Pregnancy wastage reported for 1935 in the Health Survey[1] and stillbirth
ratios computed from registration data[2] for the United States in 1935; by nativity,
color, and age of mother*

Age of Mother	Pregnancy Wastage Reported in the Health Survey			Stillbirths Registered in the United States, 1935		
	Native White	Foreign White	Colored	Native White	Foreign White	Colored
	Ratio to 100 Live Births					
Total 15–44						
Not Standardized for Age	7.1	7.6	11.1	2.9	3.7	6.6
Standardized for Age[3].	7.0	6.8	11.3	3.0	3.1	6.7
15–19	5.3	—	6.7	3.1	2.3	6.3
20–24	5.8	6.6	9.8	2.5	2.4	6.3
25–29	6.9	5.0	10.8	2.6	2.7	6.2
30–34	7.8	6.4	12.5	3.2	3.6	7.0
35–39	10.7	11.2	16.3	4.1	5.1	8.1
40–44	10.4	13.0	23.5	5.2	7.4	9.2
	Number of Live Births					
Total 15–44.	26,540	3,607	3,479	1,671,695	141,550	262,280
15–19	1,704	19	494	203,245	3,074	59,566
20–24	8,294	441	1,105	535,286	23,449	84,420
25–29	8,518	1,026	852	450,440	40,038	55,170
30–34	4,923	1,029	562	273,451	37,463	33,188
35–39	2,363	761	368	156,487	27,105	22,862
40–44	738	331	98	52,786	10,421	7,074

[1] Relates to married women of childbearing age in all cities of the *Survey*.

[2] Computed from BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935.
Washington, United States Government Printing Office, 1937, pp. 95 and 130.
Data relate to mothers of childbearing age, rural and urban, married and single.
Exclusive of Massachusetts.

[3] Concerning standardization, *see* p. 223, footnote 12.

data by legitimacy and type of community, it was possible
to procure standardized and age-specific ratios of registered
stillbirths among native-white, foreign-white, and colored

mothers.[13]   (Right sections of Table 49 and Figure 49.)   In so far as the similarity of standardized ratios for native-white and foreign-white mothers is concerned, the official data confirm the *Survey* materials.   The ratio of registered stillbirths to live births, standardized for age of mother, was 3.0 for native whites and 3.1 for foreign whites.[14]   The ratio was 6.7
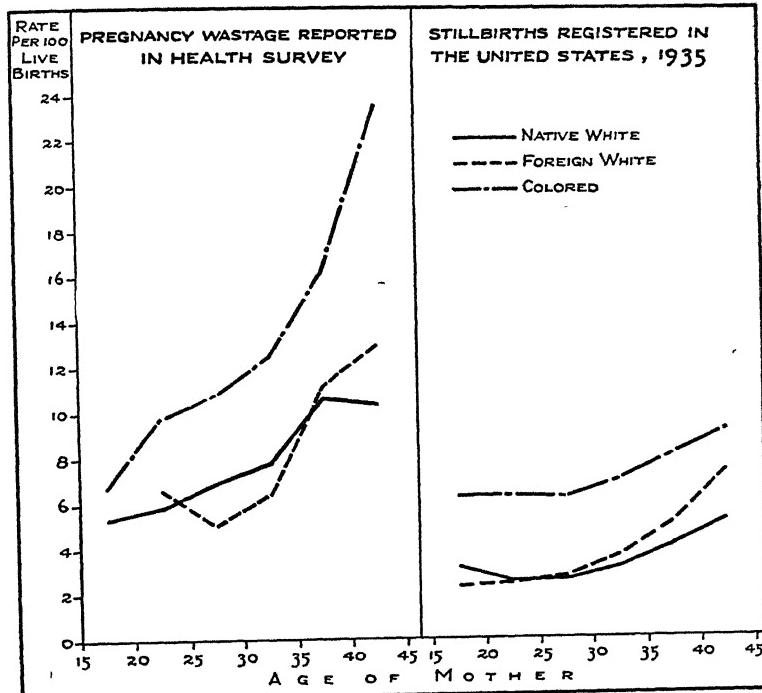

FIGURE 49.—*Pregnancy wastage reported in the Health Survey, and stillbirths registered in the United States in 1935; by nativity, color, and age of the mother*
See Table 49

for the colored, over twice as high as that for whites.   In Table 48, the proportionate differences by color were not so great because the influence of illegitimacy was ruled out.

[13] Computed from data given in U. S. Bureau of the Census: BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935. Published in 1937, pp. 95 and 130.
[14] The unstandardized ratios were as follows: native white, 2.9; foreign white, 3.7; and colored, 6.6.

That the higher ratios of pregnancy wastage among the colored than among the whites held true at all ages of the childbearing span is apparent from the *Survey* material and from official data, Figure 49. The problem of low birth rates and high proportion of childlessness among urban Negro marriages has previously been discussed (pp. 38–40). Further studies are needed to determine the extent to which problems of childlessness and pregnancy wastage among urban Negroes are interrelated and the extent to which these conditions are due to venereal disease or to other social and health correlatives of poverty.

Another point of outstanding interest in Figure 49 is the relation of pregnancy wastage to age of mother. This type of relation was especially prominent in the *Survey* data.[15] In the official data the increase of stillbirth ratios with advancing age did not begin until after age 30 for either the native-white or colored women, but thereafter the increases were definite and consistent, but small in terms of absolute numbers.

The results derived from specialized studies have not been fully uniform, but they have afforded the general indication that whereas the *proportion of pregnancies* terminating in *involuntary wastage* tends to increase only slightly with *order of pregnancy*, the proportion terminated by *induced abortions* tends to increase rather markedly.[16] The net result, therefore, is a decline with order of pregnancy in the proportion of pregnancies terminating in live births.

Although induced abortions are under-represented in the *Survey*, they are present to some extent; so this may account for the sharper rises of pregnancy wastage with age than might be expected on the basis of data wholly restricted to involuntary wastage. Furthermore, the use of ratios of wastage to live births (instead of percentage distributions of

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[15] The high ratio for colored wives 40–44 years of age in the *Survey* was based on only ninety-eight live births, so its degree of reliability is low.

[16] Stix and Wiehl, 1938, p. 623.

pregnancy terminations) enhances the variations. It is apparent that if the proportionate importance of live births declines with order of pregnancy, the use of ratios of total pregnancy wastage to live births tends to overemphasize the relation of pregnancy wastage to order of birth.[17] This limitation applies to any type of systematic variation that is found. Actually, however, in the *Survey* data as well as in the official data, the use of ratios can be justified on the ground that the materials include only portions of total pregnancy wastage, so the magnitude of the ratios does not differ substantially from that of percentages that the reported or registered cases of pregnancy wastage form of the total number of live births plus wastage.[18] Both types of indices are presented in sections of the present report.

The data by age and by order of birth considered separately do not reveal the relationships brought out by joint

[17] Students working with rather complete pregnancy data have been correct in expressing the various forms of wastage as percentages of total pregnancy terminations. The use of ratios could yield misleading results if used in connection with specific types of pregnancy wastage. If, for example, in a given population the proportion of pregnancies terminating in induced abortions increased with order of birth, but proportions terminating in stillbirths and spontaneous abortions remained constant, the ratios of spontaneous abortions or stillbirths to live births would naturally increase with order.

[18] Pregnancy wastage per 100 pregnancy terminations reported in the Health Survey, and stillbirths per 100 total births registered in the United States in 1935, by nativity, color, and age of mother.

Age of Mother	Pregnancy Wastage per 100 Pregnancy Terminations Reported in the Health Survey			Stillbirths per 100 Total Births Registered in the United States, 1935*		
	Native White	Foreign White	Colored	Native White	Foreign White	Colored
Total 15–44 (Standardized).. ...	6.6	7.1	10.0	2.9	3.6	6.2
15–19	5.0	—	6.3	3.0	2.3	6.0
20–24	5.5	6.2	8.9	2.5	2.3	5.9
25–29	6.5	4.7	9.7	2.5	2.7	5.9
30–34	7.3	6.0	11.1	3.1	3.5	6.5
35–39	9.6	10.0	14.0	3.9	4.8	7.5
40–44	9.4	11.5	19.0	5.0	6.9	8.5

* Computed from BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935, pp. 95 and 130.

TABLE 50.—Stillbirths per 100 live births registered in the United States in 1935[1] by order of child, and by age and color of mother

Order of Child[2]	White — Stillbirths per 100 Live Births							Colored — Stillbirths per 100 Live Births						
	Total 15-44 Standardized	15-19	20-24	25-29	30-34	35-39	40-44	Total 15-44 Standardized	15-19	20-24	25-29	30-34	35-39	40-44
1st Child	4.1	3.1	2.9	3.3	4.6	6.6	10.2	9.7	6.0	7.0	8.4	13.9	14.0	19.5†
2nd Child	2.5	2.9	2.0	2.1	2.6	3.7	5.7	6.5	6.4	5.5	5.8	6.7	10.5	8.7†
3rd Child	2.7	3.8	2.1	2.2	2.8	3.5	5.2	6.4	9.2	5.5	5.9	6.2	7.1	8.5†
4th Child	3.1	5.7	2.5	2.4	3.0	3.8	5.9	6.9	13.3**	5.7	5.0	6.0	9.0	11.2†
5th, 6th, and 7th Child	3.8	8.6*	3.4	2.7	3.1	4.0	5.5	8.8	22.4†	9.0	5.7	5.8	6.6	6.9
8th, 9th, and 10th Child	6.3		9.0†	5.0	3.7	4.2	4.9	12.6		18.6**	9.8	7.0	7.0	8.8
11th Child or More	5.7			7.0†	6.3	6.3	6.1	14.8			14.6†	14.0	11.2	10.1

[1] Computed from data in BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935. Washington, United States Government Printing Office, 1937, Tables 6 and 14, pp. 106–110 and 130–133.

[2] See p. 229, footnote 19, regarding limited value of the computations by order of child.

* Ratio based on 81 live births. Ratios based on fewer than this number are not shown.

† Ratio based on 100–299 live births.

** Ratio based on 300–499 live births. Unless otherwise indicated, the remaining rates are based on numbers in excess of 500, extending up to 280,470.

consideration of these factors. From official data it was possible to compute number of "stillbirths" per 100 live births by age of mother, for each order of child.[19] The data are presented in Table 50 and Figure 50 for the white and colored groups. A matter of outstanding interest is the sharp increase with age of mother in the stillbirth ratios *among first births*, especially after ages 25–30. With respect to parities above the first order, Figure 50 suggests the dual and to some extent the competing influences of crowded childbirth and of age. The characteristic pattern by age (except for the eleventh child and over) was portrayed by the concave curve with initially high ratios followed by abrupt declines and then by gradual rises with increasing age. The higher the order of childbirth, the higher was the stillbirth ratio at youngest ages, and the later was the age at which the ratios reached their lowest points before they began to show a positive relation with age of mother.

Pregnancy Wastage by Region and Size of City. The ratios of stillbirths and other pregnancy wastage by region and size of city are shown in Table 51 for native whites in the *Survey*. Whatever the significance may be, the observed ratios were lower in cities of Eastern and Central areas than

[19] The basic data came from separate series of live births and stillbirths by color, age of mother, and order of child, as given in BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935. A lack of comparability of the two series, however, consisted in the fact that order of live births was determined by reference to previous live births alone, whereas order of stillbirths was determined by reference to previous live births plus stillbirths. (Letter, December 19, 1941, from Dr. Forest E. Linder, Division of Vital Statistics, Bureau of the Census.) Thus, the writer's computations of ratios of stillbirths to live births by order and age, lack desired precision with respect to order.

It should also be pointed out that Massachusetts and New Hampshire were excluded from the distributions of live births by order and by age of mother. Only Massachusetts was excluded from the corresponding distribution of stillbirths. Thus, the ratios of stillbirths were computed from data which excluded live births but included stillbirths in New Hampshire. Correction for this would serve to lower the computed stillbirth ratios, but such changes would be imperceptible. New Hampshire contributed slightly less than one-half of one per cent of the live births and stillbirths among whites in the United States in 1935. Only seven colored live births and no colored stillbirths were reported for that State in 1935.

in cities of comparable size represented in the Southern, Mountain, and Pacific regions. In some of the area-size groups, particularly in the Mountain and Pacific areas, the numbers of births were too small to yield reliable ratios. In all regions except the Mountain, however, the samples for cities of 100,000–500,000 were represented by more than 1,000 live births. In Eastern and Central cities of this size
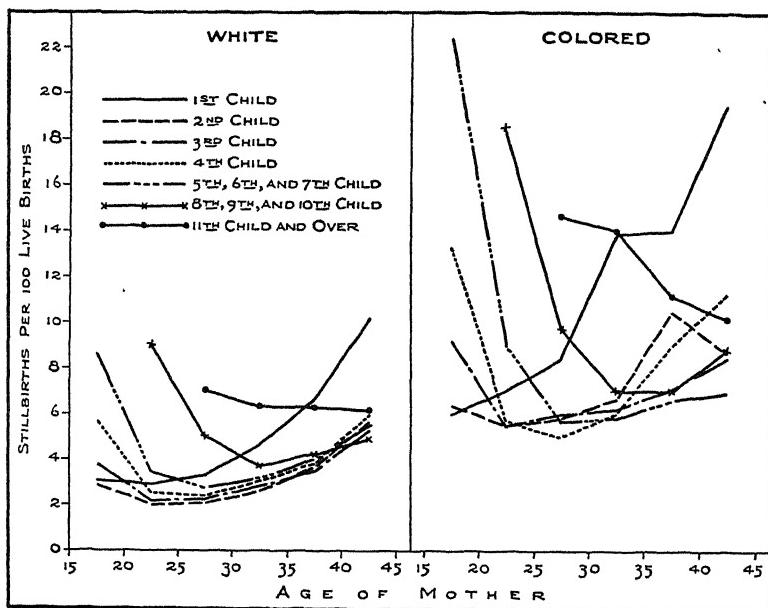

FIGURE 50.—*Computed ratios of stillbirths to live births registered in the United States in 1935, by order of child and by age and color of the mother*
See Table 50
   Note: This chart can be taken as only roughly suggestive of the relation of still-births to the joint variables of parity and age. For limitations of the above derivations, *see* footnote 19, p. 229.

the ratios of reported pregnancy wastage were 6.5 and 7.1 as compared with 9.5 in both the Southern and Pacific samples. A ratio of 11.4 was found for the Mountain area. Regional differences of approximately the same order were also found for cities of 25,000–100,000 population. In cities of less than 25,000, the ratios for the Southern and Pacific samples again were about equal (7.8 and 7.9, respectively)

and again surpassed the ratios for the Eastern and Central areas.

TABLE 51.—*Pregnancy wastage per 100 live births reported for 1935 by native-white wives of childbearing age in the Health Survey; by region and size of city*

Ratios standardized forage

Size of City	East	Central	South	Mountain	Pacific
	Pregnancy Wastage Per 100 Live Births				
500,000 and Over	5.6	6.2			11.1
100,000–500,000.	6.5	7.1	9.5	11.4	9.5
25,000–100,000	6.1	5.9	9.5		9.6
Under 25,000.	6.2	5.2	7.8	11.7	7.9
	Number of Live Births				
500,000 and Over	5,625	4,078	*	*	607
100,000–500,000 . .	1,719	2,522	2,043	485	1,118
25,000–100,000 . . .	873	1,655	1,558	*	259
Under 25,000...	1,057	1,102	863	202	774

* Not represented in the *Survey*.

Only with respect to relatively high ratios of stillbirths in the South did the official data for whites[20] confirm the re-

[20] The following were derived from basic data for states in each geographic division. Computed from: BIRTH, STILLBIRTH AND INFANT MORTALITY STATISTICS, 1935. Table 2, pp. 88–94 and Table 11, pp. 126–128. Data relate to whites, not standardized for age.

Region and Geographic Division	Cities of 10,000 and Over	Cities of 2,500–10,000	Rural
	Stillbirths per 100 Live Births		
East (Total)...	3.5	3.2	2.9
New England......	3.0	2.9	3.1
Middle Atlantic	3.6	3.3	2.9
Central (Total)...	3.0	3.3	2.6
East North Central	2.9	3.3	2.6
West North Central	3.2	3.2	2.6
South (Total)	3.8	3.8	3.2
South Atlantic.	4.0	4.6	3.3
East South Central.	3.7	3.3	3.2
West South Central	3.5	3.4	2.9
West (Total)....	2.5	2.5	2.3
Mountain......	2.8	2.6	2.4
Pacific.........	2.4	2.4	2.2

gional variations shown by the *Survey*. The ratios of still-births computed from official data tended to be lower in the Mountain and Pacific areas than in Central and Eastern areas. As previously described, however, various factors limit the comparability of the two sets of data. The "regions" are represented in the *Survey* only by selected cities, and these cities may not be typical of the region. The *Survey* data also include more abortions than do the official data. In so far as the official data are concerned, the failure to correct for residence and the differences by state in definition of stillbirths may affect the regional comparisons.

The *Survey* data indicated only partial tendency for the ratios of pregnancy wastage to increase with size of city. This type of relationship was not found at all for the Eastern and Mountain areas. In each of the remaining regions, however, it existed at least to the extent that lowest ratios were observed in cities of smallest size (under 25,000). As noted in Table 48, the official data indicated lower stillbirth ratios in rural than in urban areas, but no substantial difference between the average rates for cities of 2,500–10,000 and those for cities of 10,000 population and over.

Pregnancy Wastage by Socio-Economic Characteristics. Existing studies have indicated almost uniformly that the incidence of *involuntary* pregnancy wastage does not differ greatly in the various socio-economic classes of urban-white married women. With respect to *induced* abortions, however, the available evidence is less consistent. In their study of past pregnancy records for white married women (chiefly Jewish) who eventually attended a birth control clinic in New York City, Stix and Notestein found no significant difference between wives of white-collar workers and wives of manual workers with respect to percentages of pregnancies terminated by induced abortions.[21] Somewhat different results, however, were reported in Stix's analysis of the pre-

[21] Stix and Notestein, 1940, pp. 79–80.

clinic pregnancy terminations of married white women (chiefly Protestant) who had attended clinics for contraceptive advice in Cincinnati. In this instance, the per cent of pregnancies terminated by illegal abortions was 13.1 for wives of nonrelief white-collar workers, 8.1 for wives of nonrelief manual workers, and 4.5 for wives of relief recipients.[22]

Some diversity of results is also found regarding the relation of induced abortions to *family income*. Pearl's study of pregnancy histories of 31,000 patients of maternity hospitals indicated no significant variations by "economic status" in the percentage of pregnancies ending in induced abortion.[23] Other studies have yielded varying types of association. Thus, from the Cincinnati Clinic data, Stix found that the proportion of pregnancies terminated by induced abortions increased rather sharply with income. A less pronounced but similar type of relation was found from the New York Clinic data. On the other hand, in their study of a New York City group, unselected with reference to clinic attendance, Wiehl and Berry found that the highest proportion of pregnancies terminated by induced abortion was that for women from nonrelief families with incomes of less than $1,000 per year. As previously stated, however, all studies were in fair agreement concerning the lack of substantial variations in the incidence of involuntary pregnancy wastage, by occupational or income status.[24]

Although the *Survey* data indicated little in the way of systematic variations, the analysis did point up several socio-economic groups that appeared to be characterized by rela-

[22] Stix, 1939, p. 90.

[23] Pearl, 1939, pp. 221–222.

Note: In Pearl's data there was little room for internal variations in the incidence of induced abortions, since the rate for the total series was very low. Among the whites only 1.4 per cent and among the Negroes only 0.5 per cent of the pregnancies were reported as ending in induced abortions. The unduly low order of the rates is probably due in part to the inclusion of pregnancies responsible for the current confinements. (*See* p. 219, footnote 6.)

[24] For a more detailed summary, *see* Stix and Wiehl, 1938, p. 624.

tively high ratios of pregnancy wastage (Table 52). In brief, among native whites in the sample the highest ratios were found among wives of professional men and among wives reporting college attendance, but in the classification

TABLE 52.—*Pregnancy wastage per 100 live births reported for 1935 by married women of childbearing age in the Health Survey; by color, nativity, and socio-economic attributes*

Ratios standardized for age

Socio-Economic Attributes	Pregnancy Wastage Per 100 Live Births			Number of Live Births		
	Native White	Foreign White	Colored	Native White	Foreign White	Colored
Occupation of Head						
Professional.	8.0	4.0*	—	1,571	107	64
Business.	6.7	6.8	9.5*	8,002	917	218
Skilled and Semiskilled... .	7.3	6.2	11.5	13,035	1,891	1,217
Unskilled	6.4	10.4	11.4	2,961	632	1,756
Education of Wife						
College	8.3	10.9*	—	2,749	105	84
High School......	6.9	6.4	9.5	14,770	1,061	1,267
7th–8th Grades...	6.7	6.0	13.8	7,409	1,395	898
Under 7th Grade..	7.4	8.2	10.3	1,602	1,029	1,226
Family Income						
$3,000 and Over	6.2	—	—	1,043	85	—
2,000–2,999..	6.4	8.8*	—	2,428	280	28**
1,500–1,999.	6.4	5.3	—	4,065	571	62
1,000–1,499.	6.1	5.3	6.9	6,646	936	303
Under $1,000 and Total Relief..	8.0	8.8	11.8	11,732	1,647	3,035
Total Relief........	*8.7*	*9.1*	*11.5*	*5,812*	*900*	*1,583*

* Ratio based on 100–299 live births. Ratios based on fewer than 100 are not shown.
** $2,000 and over.

by income, among wives reporting incomes of less than $1,000.[25] The foreign-white and colored wives resembled the

[25] Among the whites the ratios of pregnancy wastage for relief recipients considered separately were somewhat higher than those for the "Under $1,000 and Total Relief" groups. Therefore, a wider difference in this direction would be

native whites in so far as relatively high ratios of pregnancy wastage for the low-income groups were concerned. They differed from the native whites in exhibiting relatively high ratios for the unskilled and "Under 7th Grade" classes. The professional and college groups of the foreign whites and colored were represented by numbers insufficient for consideration.

To examine somewhat further the opposite types of variations exhibited within the native-white group, the data are presented by age in Table 53. This time the index of wastage per 100 reported pregnancy terminations is used, not only for reasons discussed in connection with incidence by age but also because it is readily amenable to tests of significance. It will be noted in Table 53 that the highest position of the rate for the professional group held true only in the 15–24 age class. The rate for the college group stood highest in two age classes, 15–24 and 35–44. At each age, however, the highest rate of wastage was found in the lowest-income class.[26]

Furthermore, tests indicated that the high-ranking posi-

expected in comparisons between the "nonrelief" and "relief" families of low income. Results of an opposite character were found by Wiehl and Berry in their analysis of pregnancy terminations prior to the one reported in the Health Survey for New York. Whereas the Wiehl and Berry data were restricted to pregnancies before the last one, those in the present analysis are restricted to *last* pregnancies. It may be that since relief families are a select group with respect to high fertility, the association of order of birth with wastage assumes a more prominent role in data restricted to *last* than to *previous* pregnancies.

[26] The subdivision of the data for each region by socio-economic attributes resulted in small numbers (of live births) for the professional and college groups. Within the Eastern, Central, and Pacific samples, however, ratios of pregnancy wastage among native-white wives in the above classes stood in highest or relatively high position as compared with other occupational or educational classes. On a straight income basis, the relatively high position of the ratios for the "Under $1,000" groups was manifested in all five regions considered, and these groups were represented by 1,000–4,000 live births in all areas except the Mountain. As in the combined sample, the highest ratios of pregnancy wastage were consistently found for the relief recipients considered separately.

tion of the rate for the low-income classes (under $1,000 and total relief) was more generally significant in a statistical sense than were the high-ranking positions of the rates for the professional and for the college groups.   The excess of

TABLE 53.—*Pregnancy wastage per 100 pregnancy terminations reported for 1935 by native-white wives of childbearing age in the Health Survey; by age and socio-economic attributes*

Socio-Economic Attributes	Pregnancy Wastage per 100 Reported Terminations				Number of Reported Terminations			
	Total 15–44[1]	15–24	25–34	35–44	Total 15–44	15–24	25–34	35–44
Occupation of Head								
Professional..	7.4	8.1	6.6	7.9*	1,692	369	1,083	240
Business.......	6.3	4.7	6.5	10.4	8,553	2,588	4,909	1,056
Skilled and Semiskilled.....	6.9	5.7	7.3	9.3	13,997	5,628	6,670	1,699
Unskilled..	6.0	5.0	6.0	9.3	3,146	1,476	1,335	335
Education of Wife								
College	7.7	7.3	7.1	11.1	2,978	545	2,028	405
High School..	6.4	5.4	6.9	8.2	15,773	6,868	7,566	1,339
7th–8th Grades	6 2	5.0	6.2	10.4	7,921	2,723	3,950	1,248
Under 7th Grade..... ...	6.9	4.9	7.7	10.0	1,734	430	866	438
Family Income								
$3,000 and Over	5.8	3.9*	6.3	10.3*	1,117	204	700	213
2,000–2,999.	5.9	4.5	5.9	10.2	2,593	507	1,654	432
1,500–1,999.......... .	6.0	5.2	6.5	6.6	4,333	1,103	2,620	610
1,000–1,499........ ...	5.9	4.4	6.3	8.6	7,056	2,695	3,618	743
Under $1,000 and Total Relief.........	7.4	6.1	7.6	10.7	12,643	5,826	5,474	1,343
Total Relief.............	*8.0*	*6.6*	*8.1*	*11.7*	*6,313*	*2,753*	*2,715*	*845*

[1] Standardized for age.
* Rate based on 100–299 pregnancy terminations.

the rate for the low-income class over the rate for any other income class was greater than twice the standard error of the difference.[27]   On the occupational basis the excess of the rate for the professional class was significant to this degree

[27] Tests of significance of class differences in per cent of reported pregnancies terminating in wastage during the *Survey* year, native-white wives 15–44 years of

only in the professional-unskilled comparison. It will also be noted that the rate for the business class was significantly lower than that for the skilled class. In the classification by education, the rate for the wives reporting college attendance outranked the high school and 7th–8th grade groups by more than twice the standard error of the difference, but this was not true in the college-under 7th grade comparison.

In Table 54, rates of pregnancy wastage are shown for native-white wives cross-classified by occupational and educational status and also by occupational and income status. The data must be considered with care due to the limited samples for certain groups. These materials, however, did reaffirm the consistency of the high rates of pregnancy wastage among low-income families in the *Survey*. At each occupational level the rate for the low-income class was relatively high. Within the two laboring classes the inverse association between pregnancy wastage and amount of income was consistent, but the apparent consistency may have been accidental.

There was an interesting exception to the lack of marked variations in the rates in the joint classification by occupation and education. Apparently, the same women accounted in large part for the high rate of pregnancy wastage among

age. Italicized figures are used for differences larger than 2 σ difference. (*See* p. 62, footnote 25a.)

Classes Compared	Difference ± σ Difference	Classes Compared	Difference ± σ Difference
Professional–Business..	*1.1 ± .7	College–Under 7th Grade..........	*.8 ± .8
Professional–Skilled	* .5 ± .7	High School – 7th–8th Grade..	*.2 ± .3
Professional–Unskilled... ..	*1.4 ± .7	High School–Under 7th Grade	.5 ± .6
Business–Skilled.	.6 ± .3	7th–8th – Under 7th Grade..	.7 ± .6
Business–Unskilled..........	* .3 ± .5		
Skilled–Unskilled............	* .9 ± .5	$3,000 and Over–Under $1,000 + Relief . ..	1.6 ± .8
		$2,000–2,999–Under $1,000 + Relief.........	1.5 ± .6
College–High School.	*1.3 ± .5	$1,500–1,999 – Under $1,000 + Relief	1.4 ± .4
College – 7th–8th Grade . .	*1.5 ± .5	$1,000–1,499 – Under $1,000 + Relief ...	1.5 ± .4

* The higher socio-economic class of the two compared had the higher per cent of wastage. In other cases the opposite type of relation was observed.

professional and college groups.   The rate was conspicuously high for the college-trained wives of professional men, but not for college-trained wives of business or skilled workers. Similarly, the conspicuously high rate of pregnancy wastage for wives of professional men did not obtain below the college level.   It did not hold true at all income levels.

TABLE 54.—*Pregnancy wastage per 100 pregnancy terminations reported for 1935 by native-white wives of childbearing age in the Health Survey; in cross-classifications by occupation of the head and educational attainment of the wife, and by occupation of the head and family income*

Rates standardized for age

Education of Wife and Family Income	Pregnancy Wastage per 100 Reported Terminations				Number of Reported Terminations			
	Professional	Business	Skilled and Semiskilled	Unskilled	Professional	Business	Skilled and Semiskilled	Unskilled
College......................	9.4	7.4	7.1	—	717	1,527	563	82
High School............... .	6.3	6.1	6.8	6.2	832	5,416	7,586	1,411
7th–8th Grades..............	5.8*	6.1	6.5	5.9	127	1,425	4,803	1,261
Under 7th Grade...........	—	8.6*	7.7	5.1	16	181	1,042	390
$3,000 and Over..	8.4*	5.9	2.3*	—	277	659	133	9
2,000–2,999...........	6.2	6.0	5.3	—	410	1,342	702	63
1,500–1,999......	4.2	6.8	5.8	4.2*	415	1,850	1,807	173
1,000–1,499.......	6.6*	5.8	6.0	5.4	277	2,285	3,724	590
Under $1,000 and Total Relief.	9.8*	6.8	7.9	6.4	259	2,158	7,366	2,269
Total Relief...............	7.3*	7.7	8.6	6.7	108	799	3,712	1,295

* Rate based on 100–299 pregnancy terminations.   Rates based on fewer than 100 are not shown.

Although the high rates of pregnancy wastage among college and professional groups were not so consistently or significantly manifested as those observed for the low-income groups, one is perhaps not warranted in simply dismissing the former situations as erratic results of sampling.   It is well known that different types of factors influence pregnancy wastage.   One type of factor may come to the fore in one defined group; another type may predominate in another

group. With respect to college and professional groups, it is possible that a high rate of pregnancy wastage may arise in part from postponement of marriage and consequently from larger proportions of initial pregnancies at late ages. Table 50 yielded some suggestion that the risk of *stillbirth* wastage is relatively high among initial pregnancies of women of advanced ages. It is also reasonable to suppose that fear of childbirth may be unusually strong among older women who have not previously borne children. If this is true, *induced abortions* may also be relatively frequent among initial pregnancies of women who married at late ages.

With respect to the low-income groups, the high rate of pregnancy wastage may be in part an expression of the generally high rates of illness among the poor, for, as previously stated, it is probable that the reported wastage was unduly weighted by cases accompanied by morbidity. Another point to remember is that the income and pregnancy wastage data relate specifically to the depression year of 1935. Unusual economic pressures resulting in induced abortions may have been involved to some extent.

Finally, to view the matter in its proper perspective, the fertility characteristics of the different classes should be kept in mind. The actual data have indicated relatively high ratios of pregnancy wastage per live birth and per pregnancy among low-income groups and also among professional and college groups. If the incidence were stated in terms of pregnancy wastage *per woman*, the pattern of variation would be similar to that of differential fertility because pregnancies themselves are relatively few among the upper classes as compared with the under-privileged groups. One-third of the native-white wives reported family incomes of less than $1,000. These women contributed 45 per cent of the live births to native-white wives and 50 per cent of the instances of pregnancy wastage. Wives of professional men comprised 7 per cent of the native-white group, contributed 6 per cent

of the live births, and 7 per cent of the pregnancy wastage. Wives reporting college attendance constituted 12 per cent of the native-white group, bore 10 per cent of the live births, and contributed 12 per cent of the pregnancy wastage. From the standpoint of sheer magnitude, therefore, the problem of pregnancy wastage is part and parcel of the problem of high fertility among least advantaged families.

SUMMARY

Available tests indicated that only one-third to one-half of the pregnancy wastage experienced by women in the *Survey* was reported. This should be kept in mind in considering the magnitude of the ratios presented. The lack of complete reporting is not surprising, since the *Survey* was not equipped for, nor primarily interested in, the collection of complete and intensive data on pregnancy wastage. Facts on pregnancy wastage were recorded as parts of the illness records of the women concerned. The morbidity aspect probably resulted in least adequate reporting for abortions occurring during early stages of pregnancy. This probably means that induced abortions tended to be missed, particularly if they were illegal. Male interviewers were possibly at a distinct disadvantage in eliciting reports of any type of abortion. The necessity of combining all forms of pregnancy wastage constitutes another limitation in the present analysis. In view of these deficiencies, the value of *Survey* data on pregnancy wastage is restricted to the indications or suggestions of certain types of internal variations. Findings based upon official data and specialized studies have been presented for comparison at several points.

The ratios of pregnancy wastage were higher among colored than among white wives. This held true at specific ages. After correcting for age, the average ratio of wastage among native-white wives was about the same as that for foreign-white wives. Similar situations were found in official data for stillbirths.

For each color-nativity group the ratios of pregnancy wastage increased with age. A similar situation was found in official data for stillbirths.

Ratios of wastage appeared to be lower in surveyed cities of the Eastern and Central regions than in cities of comparable size in the South and West. The chief variation by region exhibited by the official data was the relatively high rate of stillbirths in the South.

Within three regions ratios of wastage were lower in cities of under 25,000 population than in groups of cities of larger size. Some further tendency for the ratios to increase with increasing size of city was discerned but the association was not complete. The official data indicated higher ratios of stillbirths in urban than in rural areas but no tendency for rates to be lower in cities under 10,000 population than in cities of 10,000 population and over.

Specialized studies have agreed in indicating fairly constant proportions of pregnancies terminated by involuntary wastage in various socio-economic classes. They have yielded varying results concerning the incidence of induced abortions along socio-economic lines. Although handicapped by severe limitations, the *Survey* data have indicated that the relationship of pregnancy wastage to socio-economic status is not a simple one. Among native whites relatively high rates of pregnancy wastage were found for wives of professional men and for wives reporting college attendance. In the classifications by income, however, the ratios were generally highest for families reporting incomes of less than $1,000. The high rate of pregnancy wastage for the low-income families was more consistently and more significantly manifested than were the high rates for the professional and college groups. Nevertheless, the diverse types of association between pregnancy wastage and socio-economic status may have been real. The factors influencing pregnancy terminations are complex and do not operate in similar directions along socio-economic lines.

CHAPTER X

CONCLUSIONS

ACH of the foregoing chapters has been summarized,
but it may be of value to draw together some of the
more important situations and relationships brought
out in the study, and to discuss them in broader contexts
than was done in preceding pages. It may also be useful to
mention certain results from other investigations and to point
up 'the areas where further research is needed.

Fertility Rates by Nativity and Color. The most radical
change in the pattern of differential fertility in recent years
is that by nativity. The fertility rates of foreign-white
married women are now but little higher than those of
native-white wives of comparable age and urban residence.
Actually, the fertility of foreign whites is of far less conse-
quence than might be implied by the virtual equality of
standardized birth rates for foreign and native-white married
women. The immigration restrictions during the 'twenties
have drastically curtailed the annual inflow of foreign whites
of young ages. The existing foreign-white population is not
only diminishing in size but is rapidly aging. Already ab-
normally deficient in proportions in younger ages of the
reproductive period, foreign-white married women are
rapidly passing out of the childbearing span altogether.
The marital fertility rate, not standardized for age, was
found to be much lower for foreign whites than for native
whites. The same would hold true with respect to crude
birth rates.

That urban Negro marriages are characterized by low
fertility levels has been amply indicated by the *Survey* data.

It has been explained that enumeration of births was probably less adequate among Negroes than among whites, but there is little doubt that the lower fertility of urban Negro marriages remains after allowance is made for that factor. It is important to point out, however, that the *crude birth rates* tended to be higher among colored populations than among white populations in the surveyed cities. A side analysis indicated a similar situation with respect to children under 5 per 1,000 *women* (married and single) 15–44 years of age, not standardized for age. The apparent paradox probably arises from the fact that colored groups were characterized by higher frequency of illegitimate births, higher frequency of marriage at youngest ages, higher rates of marital fertility at youngest ages, and by an age structure somewhat more favorable to fertility.

A revealing slant on the white-colored comparisons of marital fertility was afforded by age-specific data. Negro wives of youngest ages, 15–19, were much more fertile during the year under study than were native-white wives of similar ages. Throughout ages 20–34 the Negro wives were less fertile than whites, and this type of difference was most pronounced at ages 25–29. After age 35, there was little difference between the low rates of white and colored wives in the urban sample.

The relatively low average rate of fertility of urban Negro marriages probably arises from the high proportions of childlessness. The *Survey* data afford no material on this subject, but Notestein's analysis of 1930 family Census data for the East North Central states indicated that infertility was from two to three times as prevalent among urban Negro as among urban native-white marriages. Among marriages that were not childless, higher fertility levels were found for Negroes than for whites.

From the meager data available, it appears unlikely that the low fertility levels and the high proportion of childless-

ness among urban Negro marriages are in any important part due to contraception. The inference may be drawn that lowered fertility, pregnancy wastage, and sterility in this group may be associated with venereal disease or history thereof. Since this is a problem with public health as well as population implications, the importance of specialized studies in this field is clearly apparent.

Class Differences in Marital Fertility. The marital fertility rates by socio-economic characteristics were charted in relation to the proportionate importance of the various classes in Figure 43. With respect to distributions along socio-economic lines, the native-white wives were found to stand in most favorable and the colored wives in least favorable position. For instance, on the occupational basis, the proportion classed as wives of unskilled laborers was 9 per cent for the native whites, 17 per cent for the foreign whites, and 53 per cent for the colored wives. By educational attainment, the proportion of wives reporting less than 7th grade in formal schooling was 6 per cent for the native whites, 35 for the foreign whites, and 40 for the colored wives. With respect to family income, the proportion of wives reporting less than $1,000 or relief status was 33 per cent for the native whites, 39 for the foreign whites, and 82 for the colored wives.

The problem of class differences in marital fertility may be briefly considered for each of the three nativity-color groups.

(a) *Native White.* The *Survey* and other recent data have suggested that class differences in the fertility of native-white urban married women in this country are in the process of change. An exception to the traditional inverse order of the classes with respect to marital fertility has apparently emerged. Married women of topmost socio-economic rank appear no longer to be consistently characterized by lowest birth rates. In the *Survey*, the average rate for native-white

wives of professional men was a little higher than that for
wives of business men.   On the basis of educational status,
the birth rate of wives reporting college attendance was
almost as high as that for wives of high school status.   By
family income, the inverse relation did not extend into the
upper-income levels.

The charting of the rates in relation to proportionate im-
portance of the classes considered in Figure 43 points up
the fact that among native whites the fertility rates for the
topmost occupational, educational, and income classes are
not of great importance in so far as proportions affected are
concerned.   Thus, from a demographic standpoint, the rate
for wives of professional men is not of primary importance,
whatever its magnitude.   The importance of the reversal
in the order of professional and business classes with respect
to marital fertility inheres rather in the low level of the
rate for wives of business men, constituting over one-third
of the native-white group in the sample.   The reversal prob-
ably arose from sharp declines in the fertility within the
business class rather than from increases in fertility rates
within the professional class.   Likewise, in recent years, fer-
tility rates have possibly declined to a greater extent among
wives of high school than of college status, and to a greater
extent within moderate than within high-income groups.
The situation suggests that family limitation patterns have
infiltrated rather thoroughly into native-white urban groups
of white-collar and high school status, and that the low
fertility levels of these population sectors are important to
the general problem of low fertility in urban areas.

The *Survey* data by area and size of community furnished
rather striking suggestions of a trend toward equalization of
fertility rates in the cities of the Pacific Coast, where birth
rates of native whites are generally low.   In that area there
was little in the way of systematic differences in marital
fertility rates along occupational or educational lines.   The

inverse relation of marital fertility rates to income was marked in so far as broad outlines of the pattern are concerned, but it was not so completely manifested as in other areas.

The analysis of the data by age for the total *Survey* indicated that class variations in the fertility of white married women were mainly confined to wives under 25 or 30 years of age. At later ages, the chief exception to uniformity of birth rates by socio-economic status was the high fertility of wives in the least privileged classes. It should be kept in mind, however, that the present data relate to births during one year. In data based upon total number of children per married woman, the cumulative effects of differential fertility at youngest ages would doubtless be strikingly evident among wives in the older ages of the childbearing span.

(b) *Foreign White*. Inadequacies of the data make it difficult to generalize the situation of class differences in fertility of foreign-white married women. In the total sample the inverse relation between fertility and socio-economic status was fairly sharp. The total sample was dominated by women from large cities of the Northeast, however, and the inverse relation was not consistently found in all area-size groups. For the subdivision of foreign whites by area and size of city, however, it was necessary to restrict the analysis to wives 25–44 years of age, and the class differentials in fertility of foreign whites—like those of native whites —were apparently confined mainly to wives under 25 years. of age. Whatever the general situation may be, differential fertility among these women is not a matter of great practical consequence, for the foreign whites are rapidly losing numerical importance in this country. They will continue to diminish in importance as long as the present restrictions on immigration are effective.

(c) *Colored*. Class differences in the fertility of urban

colored married women were found to be of small importance. The faintly discernible inverse relation between occupational status and fertility rates is not of practical significance because about 90 per cent of the wives fell into the two laboring classes. On the educational basis, the fertility rate for wives reporting college attendance was conspicuously low in relation to rates for the remaining women, but college wives constituted less than 4 per cent of the group and there was little variation in the birth rates of colored wives at lower educational levels. In the classification by income, the inverse relation was clear-cut and consistent, but less than one-fifth of the colored wives reported incomes above $1,000, and only about 2 per cent reported as much as $2,000.

Class Differences in Reproduction Rates. Although interesting changes have apparently developed in the patterns of class differences in *marital* fertility, there appears still to be a strong inverse association between socio-economic status and *net rates of reproduction.* The net reproduction rate is based upon the fertility and mortality experience of all females of childbearing age, regardless of marital status. Thus, although married women of topmost socio-economic status may not be characterized by lowest birth rates, the general fertility rates and reproduction rates for the most privileged classes do stand in lowest position. This accrues from the fact that proportions married at young ages decrease with improvement of socio-economic status.

The use of the two types of rates permits a more adequate interpretation of the newer trends in differential fertility of urban white women, the group for which both types of rates were computed. The emergence of exceptions to the inverse relation between socio-economic status and *marital* fertility does not signify departure from the inverse relation in so far as net reproduction of the classes is concerned. Likewise, the lower net reproduction rate for the class of topmost socio-economic status than for the "next-highest" class is

apparently due only to differences in marriages at young-
est ages.

The net reproduction rates are of interest in themselves
since they are designed to indicate the self-replacement po-
tentialities of the groups under consideration. The net
reproduction rate computed for the total urban-white sur-
veyed population was .70. A rate of this magnitude would
mean that with continuation of age-specific fertility and
mortality rates, and without increments from migration, the
urban-white population would ultimately decline at the rate
of 30 per cent per generation. The computed rate (.70)
is probably somewhat lower than the actual for the total
urban-white population. Adjustments were made for under-
representation of small cities in the *Survey*, but none were
made for under-enumeration of births. According to pre-
liminary Census estimates, the average net reproduction
rate for the urban-white population (including Mexicans)
was .76 for the period 1935–1940.

The limitations of net reproduction rates for income classes
have been described. These must be borne in mind, but
the data suggest that in all income classes except the poorest
(under $1,000) the net reproduction rates of the urban-white
population fell below the replacement level. In the highest-
income class ($3,000 and over) the rate was .42, or less
than half that required for permanent renewal of population
through reproduction. Likewise, on the educational basis,
all except the least educated (under 7th grade) classes were
characterized by reproduction rates below replacement re-
quirements, and for women of college status the rate was
only .52, approximately half that required for permanent
self-replacement.

Cross-Classifications. The cross-classifications indicated
some tendency for internal variations in birth rates to be
greatest within the lowest classes of the primary subdivision.
For instance, when fertility rates by educational attainment

were examined within successive occupational classes, the inverse relation appeared to be strongest within the unskilled class and weakest within the professional class. A speculative explanation is that contraceptive practice may be fairly frequent among women ranking highest with respect to one socio-economic attribute, regardless of how they rank with respect to another.

There were suggestions that fertility rates during the *Survey* year were more closely associated with amount of family income than with occupational status of the head or with educational attainment of the wife. The actual cross-classified data indicated the disappearance of the inverse relation between fertility and occupational status within specific income classes above the $1,000 level. Since income related to the total family, however, selective factors accompanied cross-classifications by income and occupation. Available tests indicated that within income classes above the $1,000 level, lowering of occupational status was accompanied by sharp increases in the proportion of families with the wife gainfully employed, with relatives in residence and with the wife representing a secondary family living with parents. It was through multiple employment that laboring families qualified for inclusion in the higher-income brackets. The point to emphasize, however, is that since selections of the above type introduce selections with respect to low fertility they would tend to eliminate any actual inverse relation between fertility and occupational status at high and moderately high income levels.

Suggestions of the relatively close association of fertility and income were not confined to the cross-classified data. The one-way classifications, for instance, indicated that the fertility rate was just as high for the third of the group of native-white wives ranking lowest with respect to income as for the 9 per cent in the unskilled class and 6 per cent in the "Under 7th Grade" class. Also, among the native-white

wives surveyed in Pacific Coast cities and among the total urban-colored wives there were only minor variations in birth rates by occupation or education, but the inverse relation between fertility and income status was prominent.

It should be emphasized, however, that whatever the type of evidence afforded by the *Survey*, the very character of the indices of fertility and socio-economic status used in the *Survey* served to bias the results in the direction of relatively close association of fertility and income. The indices of fertility and income related specifically to the same period, the depression year of 1935. The occupational status, however, was determined by the *usual* type of work of the family head, and the educational attainment of the wife was based upon the accomplished fact of school attendance. Thus, family income would be expected to provide a more sensitive barometer of the condition of the family during the short period under study than would either the occupational or educational status. Different results might have been obtained had the index of fertility related to total number of children ever born or had the *Survey* been made at a time less characterized by depression conditions.

The above limitations reduce the value of the *Survey* data for purposes of assessing the relative importance of specific factors to fertility. They should be remembered in planning future studies of this type. If it is desired to compare the closeness of the association of different factors with fertility, comparability with respect to time should be kept in mind. More important, if cross-tabulations of income with another criterion of socio-economic status are to be made for studies of fertility, the use of income of the husband would seem to be much preferable to that of family income. It also appears likely that if an index like rental value of the home is cross-classified with another, such as occupation of the head, selective factors with respect to family characteristics and therefore with respect to fertility will be encountered. Laboring

families in high-rent classes, like those in high family-income classes, probably tend to be those with multiple workers. It has been stressed, however, that for really adequate studies of the bearing of different factors on human fertility we need a much wider scope of data on this specific question than was feasible in an extensive survey devoted primarily to problems of health.

Supplementary Rural Survey. The surveys of selected rural and village vicinities in Georgia, Missouri, and Michigan were obviously not intended to yield samples representative of the total rural population. In the case of the Missouri and Michigan samples, the restricted groups selected for study were not even intended to be representative of the rural populations of those particular states. Nevertheless, several points of interest emerged from the analysis of internal differentials in fertility among the groups studied.

As expected, the fertility rates derived from the rural and village samples were considerably higher than were those based upon the urban data. This held true for native whites of comparable occupational and educational status. Only in the Georgia rural sample were the colored wives sufficiently numerous to be included in the analysis, but the rates for these were quite high in comparison with the rates for colored wives enumerated in urban areas of the *Survey*. Furthermore, in contrast to the situation in the cities, the fertility rate for the rural Georgia colored wives fell only a little below that for white wives of comparable residence. Adequate adjustment for under-enumeration of births would probably have resulted in higher rates for rural colored than for rural-white wives in Georgia. Official data generally indicate that within the rural-farm population, but only within the rural-farm population, the reproduction rates for Negroes tend to exceed those for whites.

In considering the general question of rural-urban differ-

ences in fertility, one may tend to think in terms of contrasts between open country areas and fairly large cities. The present data indicated a successive lowering of fertility rates with progression from purely rural to village to small town populations. Of especial interest in this connection were the considerably lower fertility rates in Georgia villages with fewer than 500 inhabitants than in the surrounding open country areas. This appeared to hold true when fertility rates for similar occupational groups in the two types of communities were compared.

The rural data provided no readily apparent indication that class differences in fertility were less pronounced within rural and village areas than within cities. Among native-white agricultural families, as in 1910, the marital fertility rates appeared to be lowest for farm owners, next for farm renters, and highest for farm laborers. A finding of somewhat novel character was that the familiar order of the urban occupational classes not only held true within small villages but also among the nonfarm families residing in purely rural areas. The rates tended to be lowest for wives of business men and highest for wives of unskilled laborers. The relation of birth rates to educational attainment also followed about the same pattern in rural and village areas as in cities.

Pregnancy Wastage. The pregnancy wastage data in the *Survey* were deficient in several respects, perhaps partly as a result of the morbidity criteria for recording previable terminations, but perhaps mainly as a result of the reluctance of women to discuss abortions with non-medical interviewers, particularly if the interviewers were men. Available tests indicated that only one-third to one-half of the pregnancy wastage that occurred during the *Survey* year was reported.

The outstanding differentials in pregnancy wastage observed in the *Survey* were those by color and by age. For both white and colored wives, ratios of pregnancy wastage

to live births increased with age, and at all ages the ratios were higher for the colored than for the whites. The high rate of pregnancy wastage among urban Negro marriages perhaps helps to account for the low rate of live births and high rate of childlessness frequently found for this group. There was little difference between native-white and foreign-white wives with respect to age-specific ratios of pregnancy wastage. The official data on ratios of stillbirths to live births revealed similar relationships. They also indicated relatively high ratios of stillbirths among illegitimate as compared with legitimate offspring, and among urban as compared with rural births.

By socio-economic class, the most consistent type of variate in pregnancy wastage yielded by the *Survey* data was the relatively high order of the ratios for wives reporting incomes of less than $1,000. In classifications by occupation and by education, however, the ratios were relatively high for wives of professional men and for wives reporting college attendance. The *Survey* tabulations were not separable with respect to type of pregnancy wastage. Specialized studies permitting such a breakdown have yielded fairly uniform results concerning the constancy of the proportion of pregnancies terminating in spontaneous abortions among urban-white women of all classes. They have yielded differing results regarding the association of induced abortions with socio-economic status. The question needs further study, but it is certain that various types of factors influence the incidence of pregnancy wastage, and these do not operate similarly along socio-economic lines.

Population Trends and Population Policy. In general, there is fair evidence not only from the present study but also from other data that group differences in fertility are tending to diminish rather than to increase. The most striking instance in this respect is the sharp decline in the birth rates of the foreign whites to the levels of the native-

white groups.   The present study, like other recent kindred
investigations, has indicated that class differences in marital
fertility may not be so important as they once were.

If the above is true, it can perhaps be interpreted as the
result of the widening spread of contraceptive practice.
Professor Ogburn suggested some years ago that modern
methods of contraception might well be regarded as an in-
vention that found its first acceptance among the more
privileged urban-white families and has since tended to
spread outward to the rural areas and downward in the socio-
economic scale.   As this process runs its course, the effect
would be first an enlargement and later a diminution of
group differences in fertility.

With some possible qualification such a process seems
actually to have occurred in England and Wales.   Modern
contraceptives may have found their first use in those
countries as preventives of illegitimate conception.   At all
events, for some ten years prior to 1876 the rates of illegiti-
mate, but not legitimate, births declined sharply.   Accord-
ing to Innes, the famous trial of Bradlaugh and Besant in
1876 not only publicized birth control but helped to make
it respectable.   Whatever this situation may have been,
it is a matter of record that in 1877 the legitimate, and there-
fore the general, birth rates began their long downward
course, and during the last quarter of the nineteenth century
there was an unmistakable widening of class differences in
fertility in England and Wales.   From 1921 to 1931 there
was a distinct contraction of the differentials, due to the
more rapid decline in the birth rates for under-privileged
than for the upper classes.   It may be, therefore, that im-
portant class differences in fertility, as we have known them
in the past, constitute a transitory stage in a long period of
declining fertility.

Despite the examples of shrinkage of group differences in
fertility in this country, it would be quite erroneous to con-

clude that equalization of fertility rates along socio-economic lines is near at hand. As previously stated, there is still a marked and consistent inverse relation between socio-economic status and net reproduction rates. Even with respect to marital fertility, the *Survey* materials have indicated that the third of the native-white families reporting incomes of less than $1,000 per year contributed about 45 per cent of the births during the year.

The fact also remains that on a national basis one of our foremost population problems has been the rural-urban imbalance in fertility. According to a preliminary 1940 Census release, during 1935–1940 our urban-white population was bearing only about three-fourths of the number of children required for self-replacement on a permanent basis. The *Survey* data have suggested that urban whites in families earning $3,000 per year and over have only about half the children required for permanent renewal of their numbers through births.

On the other hand, again according to preliminary computations from 1940 Census data, the net reproduction rate for the rural-farm population during 1935–1940 was 36 per cent above the requirements for permanent replacement. Studies based upon 1930 Census data have repeatedly shown that the highest birth rates of all are found in the "rural problem" areas where incomes are most meager and where facilities for public health and education are least adequate. This problem is one that assumes national importance, for many of the surplus people must turn to cities in search of employment. It began to be manifested in acute form during the 'thirties. That decade of the depression and of the drought and evacuation from the Dust Bowl was also marked by rapid development of mechanization of agriculture. Families were turned off the land and deprived of their former scant security as sharecroppers. The "Joads," the "Okies," and the "Arkies" became symbols of the

transients, untrained and unwanted except for seasonal labor.

More recently we have learned with disquietude of the high rate of rejections for military service due to physical defects and lack of fourth-grade education. It is perhaps not too far-fetched to link this problem with a situation wherein undue proportions of the nation's children are born in areas where levels of living are lowest and where facilities for schools and child health are poorest.

Thus, we are confronted with opposite types of problems with respect to fertility, and any long-range and well-balanced population policy must take both types into account. Careful students of population have long been aware of the need for a well-balanced national policy with respect to human resources, but they have also been cognizant of the complexities involved. As for areas of severe population pressure, the problem is more fundamental than the mere unavailability of contraception. Questions of social and economic rehabilitation are involved, and the broad scope of these is suggested by such a program as that of the Tennessee Valley Authority.

When we turn to the problem of encouraging larger families among urban groups, we run into a different set of complexities. Much has been written about the costs and inconveniences of children in cities, of family insecurity in our present industrial economy, of the emancipation of women, and of other deterrents to large families in cities. Yet there is no formula of demonstrated and lasting effectiveness for encouraging more babies among groups familiar with means of family limitation. This does not mean that social conditioning of family size is out of the question. It signifies, rather, the challenge to learn more about the social and psychological factors affecting fertility among groups "free to choose." Some beginning has been made in this field of inquiry.

Sweden came to grips with some of these problems in her short-lived population policy and program of social welfare, enacted just before the outbreak of World War II. She sought, and maybe found, a unifying principle for a joint attack on opposite types of fertility problems. This was to make contraception available to all groups, but at the same time to try to enhance the attractions of family life and, hence, to encourage larger families on a voluntary basis. On the one hand, contraception was encouraged among families for whom more children seemed contraindicated for reasons of health, economic conditions, and other inadequacies. On the other hand, varied types of community services for mothers and children were begun by way of encouraging voluntary parenthood. There was the hope of lessening the economic penalties of having children. Toward this end there were such provisions as maternity leaves for working wives, and a schedule of rental rebates based upon size of family. These provisions were integrated with broad programs of housing, public health, education, and general welfare. Unfortunately, this ambitious program had progressed little further than the statute stage before the encroaching shadow of Hitler forced Sweden to divert her public funds to national defense.

As long as we are at war it is not likely that our country will embark on any program comparable with that attempted by Sweden. Our country is larger, our population more heterogeneous, and in other respects, our social problems are probably more complex than those of Sweden. Furthermore, it is being realized that to prepare for post-war reconstruction we must think in terms of international as well as national population problems. In this connection, it is encouraging to note that studies of economic and demographic problems of different countries of the world are now being carried out by various official and unofficial agencies in this country. This work is devoted to the collection and

systematizing of factual data that may well be of value in the days to come. We do not know what the future holds, but if we are to avoid the errors of the past, we must be less wasteful of our human resources. If a peace is to be lasting, we must work toward the establishment of conditions under which families of all nations can live in health and security.

APPENDIX TABLES

APPENDIX TABLE 1.—*Households and population enumerated in the Health Survey; comparison of births per 1,000 population in the Health Survey, with resident birth rates during 1935 computed from official data, by city and color*

Surveyed Cities by Area and Size	House-holds Enu-mer-ated[1]	Health Survey						Resident Births per 1,000 Popu-lation in 1935, Computed from Official Data[3]		
		Enumerated Population[2]			Births per 1,000 Population					
		Total	White	Colored	Total	White	Colored	Total	White	Colored
EAST										
500,000 and Over										
Boston, Mass....	29,808	108,204	104,717	3,487	13.4	13.4	13.8	16.0	16.0	15.2
Buffalo, N. Y.	24,055	90,931	88,750	2,181	15.0	14.7	23.4	15.4	15.3	18.5
New York, N. Y...	48,281	182,155	172,861	9,294	13.3	13.3	14.1	13.8	13.6	16.5
Philadelphia, Pa. . . .	32,360	122,768	106,144	16,624	13.2	12.9	15.2	14.5	14.0	18.4
Pittsburgh, Pa.... ..	20,391	80,063	74,053	6,010	13.5	13.2	16.5	14.4	14.1	16.9
100,000–500,000										
Fall River, Mass... ...	10,481	40,864	*		14.5			15.7	*	
Newark, N. J. ...	13,999	54,592	48,604	5,988	13.6	13.1	17.7	14.3	13.6	20.6
Syracuse, N. Y..	12,827	46,631	*		12.3			14.3	*	
Trenton, N. J... . .	7,580	30,330	28,489	1,841	12.9	12.6	18.5	13.2	*	
25,000–100,000										
Lebanon, Pa..	6,412	24,208	*		15.7			21.6	*	
Pittsfield, Mass.	11,951	45,172	*		14.1			14.2	*	
Under 25,000										
Bridgeton, N. J........ .	4,419	15,576	13,863	1,713	14.3	13.9	16.9	15.5	*	
Duryea, Pa...	1,729	8,370	*		16.2					
Greenfield, Mass.	4,045	14,485	*		13.9			14.3	*	
Hudson, N. Y... . ..	3,185	11,038	*		14.2			17.1	*	
Indiana, Pa..	2,490	9,373	*		11.9					
Ipswich, Mass...... .. .	1,448	5,677	*		14.6					
Lambertville, N. J.. . . .	1,100	4,086	*		12.7					
Newark, N. Y.	1,861	6,317	*		16.5			12.6	*	
Penn Yan, N. Y...	1,514	4,842	*		14.3			16.2	*	
Somerville, N. J...	2,106	7,740	*		14.0					
CENTRAL										
500,000 and Over										
Chicago, Ill..	38,501	135,764	124,266	11,498	13.7	13.4	16.8	14.4	14.3	16.5
Cleveland, O.	31,993	119,227	109,127	10,100	12.4	12.2	14.7	14.4	14.2	15.9
Detroit, Mich..	21,389	79,261	73,996	5,265	15.6	15.6	16.7	16.1	16.1	15.8
St. Louis, Mo. . .	24,116	82,370	70,231	12,139	12.7	11.9	17.1	14.4	14.0	17.9
100,000–500,000										
Cincinnati, O..	12,549	40,978	36,048	4,930	13.1	13.3	12.2	14.5	14.1	17.5
Columbus, O...	11,058	39,162	36,183	2,979	13.5	13.0	18.5	15.2	15.1	16.0

APPENDIX TABLE I—*Continued*

Surveyed Cities by Area and Size	Health Survey							Resident Births per 1,000 Population in 1935, Computed from Official Data[3]		
	Households Enumerated[1]	Enumerated Population[2]			Births per 1,000 Population					
		Total	White	Colored	Total	White	Colored	Total	White	Colored
CENTRAL—*Continued*										
100,000–500,000—Continued										
Flint, Mich.........	4,826	18,475	*		20.3			22.2	*	
Grand Rapids, Mich..	5,112	17,951	*		14.3			16.8	*	
Minneapolis, Minn..	12,295	41,580	*		12.6			13.5	*	
St. Paul, Minn............	12,899	47,024	*		13.8			15.6	*	
25,000–100,000										
Lima, O...	11,283	38,569	37,224	1,345	13.3	13.3	14.9	15.4	*	
Port Huron, Mich.	8,295	30,223	*		18.3			21.0	*	
Springfield, Mo..	16,650	56,565	54,710	1,855	13.7	13.6	15.6	15.0	*	
Under 25,000										
Benton, Ill...	2,107	7,424	*		15.0					
Chillicothe, Mo..	2,135	7,935	*		13.1					
Chisholm, Minn.	1,778	7,298	*		10.0					
Clinton, Mo...	1,646	5,376	*		16.4					
Franklin, O.	1,088	4,019	*		19.4					
Houghton, Mich.	991	3,638	*		15.4					
Normal, Ill.	1,749	7,026	*		11.0					
Wilmar, Minn..... .	1,799	6,522	*		18.7					
Wilmington, O. . .	1,499	5,109	*		17.8					
Winona, Minn.	6,426	22,780	*		16.2			18.8	*	
SOUTH										
100,000–500,000										
Atlanta, Ga..	10,737	38,605	24,578	14,027	14.2	13.6	15.3	18.0	17.3	19.2
Birmingham, Ala..	11,172	40,920	27,488	13,432	14.5	13.0	17.6	16.4	15.2	18.4
Dallas, Tex........... .	10,898	36,740	†		12.6			15.8	†	
Houston, Tex..	11,738	40,148	31,742**	8,406	13.3	13.8	11.3	15.2	15.6	13.7
New Orleans, La..	13,192	48,201	30,860	17,341	14.3	12.5	17.5	16.3	13.9	22.0
Richmond, Va..	12,542	46,925	30,962	15,963	10.4	9.0	13.1	14.0	12.5	17.5
25,000–100,000										
Amarillo, Tex...	11,091	36,276	†		16.8			16.2	†	
Monroe, La...	6,985	24,699	14,152	10,547	14.4	13.8	15.2	17.7	16.7	19.2
Montgomery, Ala...	9,742	34,334	18,455	15,879	16.4	16.9	15.7	16.2	15.3	17.2
Wichita Falls, Tex.	10,793	36,864	†		16.4			18.1	†	
Under 25,000										
Abbeville, La........	1,373	5,493	4,234	1,259	17.7	16.5	21.4			
Bossier, La....	917	3,389	2,504	885	15.3	15.6	14.7			
Brunswick, Ga.	3,094	11,651	6,856	4,795	18.8	19.8	17.3	17.5	20.2	13.8
Covington, Va.	1,501	6,301	5,306	995	15.6	15.8	14.1			
Eufaula, Ala.	1,412	5,120	2,820	2,300	18.4	15.6	21.7			
Farmville, Va..	857	3,734	2,477	1,257	12.3	7.7	21.5			
Gadsden, Ala.	5,525	22,262	16,669	5,593	21.4	21.0	22.5	20.4	22.8	13.8
Greenville, Ala.	1,048	3,774	2,070	1,704	21.5	18.4	25.2			
Minden, La.	1,401	4,973	2,921	2,052	15.5	17.5	12.7			
Weatherford, Tex.........	1,497	5,231	5,011	220	14.3	14.6	9.1			

APPENDIX TABLE I—*Concluded*

Surveyed Cities by Area and Size	Households Enumerated[1]	Health Survey						Resident Births per 1,000 Population in 1935, Computed from Official Data[3]		
		Enumerated Population[2]			Births per 1,000 Population					
		Total	White	Colored	Total	White	Colored	Total	White	Colored
MOUNTAIN										
100,000–500,000										
Salt Lake City, U......	7,775	27,923	*		19.8			20.1	*	
Under 25,000										
Bingham Canyon, U......	905	2,854	*		25.9					
Eureka, U....	651	2,378	*		22.3					
Tooele, U.... .. .	1,143	4,478	*		21.7					
PACIFIC										
500,000 and Over										
Los Angeles, Calif. ..	26,297	76,707	71,769**	4,938	12.9	12.6	16.8	12.5	12.4	14.5
100,000–500,000										
Oakland, Calif. .	8,361	24,331	23,265	1,066	12.1	11.9	15.0	11.7	11.8	10.3
Portland, Ore.	10,329	31,060	*		11.1			11.5	*	
Seattle, Wash... ..	9,724	29,552	28,657	895	10.9	11.1	5.6	11.5	11.5	11.5
Spokane, Wash.	8,127	25,201	*		13.2			12.5	*	
25,000–100,000										
Salem, Ore.	8,142	23,695	*		11.9			12.3	*	
Under 25,000										
Chico, Calif.	2,539	7,860	*		13.9					
Ellensburg, Wash.. .. .	1,466	4,692	*		15.6					
Grass Valley, Calif......	1,507	4,791	*		12.5					
Jackson, Calif.	683	1,950	*		17.9					
La Grande, Ore..	2,264	7,378	*		14.4					
Napa, Calif.	1,812	5,560	*		13.1					
Olympia, Wash.......	3,721	11,087	*		13.9			13.2	*	
Vallejo, Calif..	4,626	13,498	*		13.5			14.7	*	
St. Helens, Ore.....	1,279	4,060	*		15.0					

[1] From: Perrott, Tibbitts, and Britten, 1939, pp. 1680–1681.

[2] Compiled from: The National Health Survey, 1935–36; Color, Sex and Age of the Population Enumerated. Washington, U. S. Public Health Service, 1938, pp. 6–16.

[3] Tabulations of registered births during 1935 (allocated to place of residence) were supplied by the Bureau of the Census, Division of Vital Statistics. The resident births during 1935 in Newark, N. Y. and Penn Yan, N. Y. were secured from the Fifty-Sixth Annual Report of the New York State Department of Health. Estimated populations of the respective cities on July 1, 1935 were secured by arithmetic interpolation of 1930–1940 Census populations. For cities over 100,000 the populations by color, as given by the Bureau of the Census in the release of May 10, 1941, Series P5-No. 10, were used; and for cities under 100,000 the 1930 color ratio was applied to the total population. No corrections for under-registration were made for this table.

* Data unavailable by color.

† Rates by color not presented since it was not possible to secure comparable classifications of Health Survey and Census populations.

** Mexicans included with whites to make the *Survey* data for these cities comparable with official data. *See* page 28 for more detailed classifications by color in these cities.

Appendix Table 2.—*Crude birth rates from the Health Survey and from official data, uncorrected and corrected on the basis of "medium" and "maximum" estimates of under-registration. Surveyed cities for which comparisons with official data were available, by area, size, and color*

	White					Colored				
Surveyed Cities by Area and Size	Births per 1,000 Population		Per Cent Births tered in Total 1929–1930¹	Corrected Rate from Official Data		Births per 1,000 Population		Per Cent Births tered in Total 1929–1930¹	Corrected Rate from Official Data	
	Health Survey	Computed from Official Data		"Medium" $3 + \frac{3}{4}(6-3)$	"Maximum" $100(3 \div 4)$	Health Survey	Computed from Official Data		"Medium" $8 + \frac{3}{4}(11-8)$	"Maximum" $100(8 \div 9)$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
EAST										
500,000 and Over	13.5	14.5*		14.6	14.6*	15.5	17.4*		17.5	17.5*
Boston, Mass.... . ..	13.4	16.0	100.0	16.0	16.0	13.8	15.2	95.0	15.8	16.0
Buffalo, N. Y... . . .	14.7	15.3	100.0	15.3	15.3	23.4	18.5	100.0	18.5	18.5
New York, N. Y. ...	13.3	13.6	100.0	13.6	13.6	14.1	16.5	100.0	16.5	16.5
Philadelphia, Pa.	12.9	14.0	98.8	14.2	14.2	15.2	18.4	100.0	18.4	18.4
Pittsburgh, Pa. .. .	13.2	14.1	98.8	14.3	14.3	16.5	16.9	100.0	16.9	16.9
100,000–500,000										
Newark, N. J. ...	13.1	13.6	96.4	14.0	14.1	17.7	20.6	98.3	20.9	21.0
25,000–100,000²....	14.6	16.7*		16.8	16.8*					
Lebanon, Pa.. . .	15.7	21.6	98.8†	21.8	21.9					
Pittsfield, Mass.	14.1	14.2	99.9†	14.2	14.2					
10,000–25,000² . .	14.1	15.5*		15.7	15.7*					
Bridgeton, N. J.	14.3	15.5	96.6†	15.9	16.0					
Greenfield, Mass.	13.9	14.3	100.0†	14.3	14.3					
Hudson, N. Y.	14.2	17.1	100.0†	17.1	17.1					
CENTRAL										
500,000 and Over	13.2	14.6*		15.3	15.5*	16.3	16.7*		17.9	18.3*
Chicago, Ill.	13.4	14.3	94.7	14.9	15.1	16.8	16.5	94.6	17.2	17.4
Cleveland, O.	12.2	14.2	94.4	14.8	15.0	14.7	15.9	90.6	17.1	17.5
Detroit, Mich..	15.6	16.1	97.3	16.5	16.6	16.7	15.8	91.2	16.9	17.3
St. Louis, Mo..	11.9	14.0	90.5	15.1	15.5	17.1	17.9	86.7	20.0	20.7
100,000–500,000......	13.2	14.6*		15.2	15.4*	14.5	16.9*		18.3	18.7*
Cincinnati, O..	13.3	14.1	94.4	14.7	14.9	12.2	17.5	90.6	18.9	19.3
Columbus, O.	13.0	15.1	94.4	15.8	16.0	18.5	16.0	90.6	17.3	17.7
25,000–100,000²	14.7	16.6*		17.4	17.7*					
Lima, O.	13.3	15.4	94.3†	16.1	16.3					
Port Huron, Mich.......	18.3	21.0	97.0†	21.5	21.6					
Springfield, Mo.	13.7	15.0	90.4†	16.2	16.6					
10,000–25,000²										
Winona, Minn..	16.2	18.8	94.3**	19.6	19.9					
SOUTH										
100,000–500,000.	12.3	14.8*		16.5	17.1*	15.3	18.7*		21.0	21.7*
Atlanta, Ga..	13.6	17.3	84.7	19.6	20.4	15.3	19.2	86.3	21.5	22.2
Birmingham, Ala........	13.0	15.2	92.9	16.1	16.4	17.6	18.4	92.7	19.5	19.9

APPENDIX TABLE 2—*Concluded*

	White					Colored				
Surveyed Cities by Area and Size	Births per 1,000 Population		Per Cent Births Registered in Total State 1929-1930[1]	Corrected Rate from Official Data		Births per 1,000 Population		Per Cent Births Registered in Total State 1929-1930[1]	Corrected Rate from Official Data	
	Health Survey	Computed from Official Data		"Medium" $3 + \frac{3}{4}(6-3)$	"Maximum" $100 (3 \div 4)$	Health Survey	Computed from Official Data		"Medium" $8 + \frac{3}{4}(11-8)$	"Maximum" $100 (8 \div 9)$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
SOUTH—*Continued*										
100,000-500,000—Continued										
Houston, Tex..	13.8	15.6	85.0‡	17.7	18.4	11.3	13.7	80.0‡	16.3	17.1
New Orleans, La... .. .	12.5	13.9	78.3	16.8	17.7	17.5	22.0	78.1	26.7	28.2
Richmond, Va...	9.0	12.5	95.4	13.0	13.1	13.1	17.5	98.7	17.7	17.7
25,000-100,000.... . .	15.5	15.9*		17.9	18.5*	15.5	18.0*		20.3	21.0*
Monroe, La...	13.8	16.7	78.3	20.2	21.3	15.2	19.2	78.1	23.3	24.6
Montgomery, Ala.. .	16.9	15.3	92.9	16.2	16.5	15.7	17.2	92.7	18.3	18.6
10,000-25,000	20.7	22.1*		23.8	24.4*	20.1	13.8*		15.0	15.4*
Brunswick, Ga.. .. .	19.8	20.2	84.7	23.0	23.9	17.3	13.8	86.3	15.5	16.0
Gadsden, Ala.	21.0	22.8	92.9	24.2	24.6	22.5	13.8	92.7	14.6	14.9
MOUNTAIN										
100,000-500,000[2].. . .										
Salt Lake City, U.. .	19.8	20.1	94.9	20.9	21.2					
PACIFIC										
500,000 and Over										
Los Angeles, Calif. ...	12.6	12.4	94.7	12.9	13.1	16.8	14.5	73.5	18.4	19.7
100,000-500,000....	11.5	11.6*		12.1	12.3*	10.7	10.8*		13.8	14.8*
Seattle, Wash..	11.1	11.5	94.5	12.0	12.2	5.6	11.5	73.5§	14.7	15.7
Oakland, Calif......... .	11.9	11.8	94.7	12.3	12.5	15.0	10.3	73.5	13.1	14.0
25,000-100,000[2]										
Salem, Ore...	11.9	12.3	93.1**	13.0	13.2					
10,000-25,000[2]	13.7	14.1*		14.7	14.9*					
Olympia, Wash.... ...	13.9	13.2	94.3†	13.8	14.0					
Vallejo, Calif...	13.5	14.7	93.5†	15.5	15.7					

[1] Estimates for states, by color, computed by Whelpton with partial use of Foudray's method. *See* Whelpton, P. K.: The Completeness of Birth Registration in the United States. *Journal of the American Statistical Association*, June, 1934, xxix, 186, Table I, Column D, pp. 128-129.

[2] Total population can be regarded as white. Tabulations were not available by color due to unimportance of colored populations in cities concerned.

* Derived by weighting rates for cities within an area-size group, according to importance of these cities in the Health Survey.

† Index for white and colored combined, derived by weighting Whelpton's indices by color in the state according to distribution by color in the city. Index differs only slightly from that for whites due to unimportance of colored population. *See* preceding footnote 2.

** Index for white population in the total state; that for colored not given. *See* the preceding footnotes.

‡ Index for Texas not estimated by Whelpton. This is an assumed index based upon figures for the Southern states.

§ Index of under-registration of colored in Washington not estimated b y Whelpton. For present purposes it was assumed to be the same as that for colored births in California.

APPENDIX TABLE 3.—*Crude birth rates from the Health Survey expressed as percentages of rates computed from official data, uncorrected and corrected on the basis of "medium" and "maximum" estimates of under-registration. Surveyed cities by area, size, and color for which data were available*

Surveyed Cities by Area and Size	White			Colored		
	Preliminary Correction of Official Data for Under-Registration[1]			Preliminary Correction of Official Data for Under-Registration[1]		
	No Correction	"Medium" Correction	"Maximum" Correction	No Correction	"Medium" Correction	"Maximum" Correction
(1)	(2)	(3)	(4)	(5)	(6)	(7)
EAST						
500,000 and Over	93	92	92	89	89	89
Boston, Mass....	84	84	84	91	87	86
Buffalo, N. Y.	96	96	96	126	126	126
New York, N. Y..	98	98	98	85	85	85
Philadelphia, Pa.	92	91	91	83	83	83
Pittsburgh, Pa.......	94	92	92	98	98	98
100,000–500,000						
Newark, N. J..	96	94	93	86	85	84
25,000–100,000.	87	87	87			
Lebanon, Pa.	73	72	72			
Pittsfield, Mass.	99	99	99			
10,000–25,000	91	90	90			
Bridgeton, N. J.	92	90	89			
Greenfield, Mass...	97	97	97			
Hudson, N. Y.............. .	83	83	83			
CENTRAL						
500,000 and Over.......	90	86	85	98	91	89
Chicago, Ill.....	94	90	89	102	98	97
Cleveland, O.........	86	82	81	92	86	84
Detroit, Mich.....	97	95	94	106	99	97
St. Louis, Mo......	85	79	77	96	86	83
100,000–500,000	90	87	86	86	79	78
Cincinnati, O.....	94	90	89	70	65	63
Columbus, O..................	86	82	81	116	107	105
25,000–100,000	89	84	83			
Lima, O......................	86	83	82			
Port Huron, Mich..............	87	85	85			
Springfield, Mo................	91	85	83			
10,000–25,000						
Winona, Minn.............. ..	86	83	81			
SOUTH						
100,000–500,000	83	75	72	82	73	71
Atlanta, Ga.....	79	69	67	80	71	69
Birmingham, Ala.	86	81	79	96	90	88
Houston, Texas	88	78	75	82	69	66
New Orleans, La..............	90	74	71	80	66	62
Richmond, Va................	72	69	69	75	74	74

[1] *See* Appendix Table 2 for actual rates and explanatory notes.

APPENDIX TABLE 3—*Concluded*

Surveyed Cities by Area and Size	White			Colored		
	Preliminary Correction of Official Data for Under-Registration[1]			Preliminary Correction of Official Data for Under-Registration[1]		
	No Correction	"Medium" Correction	"Maximum" Correction	No Correction	"Medium" Correction	"Maximum" Correction
(1)	(2)	(3)	(4)	(5)	(6)	(7)
SOUTH—*Continued*						
25,000–100,000.	97	87	84	86	76	74
Monroe, La................ .	83	68	65	79	65	62
Montgomery, Ala............	110	104	102	91	86	84
10,000–25,000.......	94	87	85	146	134	131
Brunswick, Ga...	98	86	83	125	112	108
Gadsden, Ala.	92	87	85	163	154	151
MOUNTAIN						
100,000–500,000						
Salt Lake City, U..	99	95	93			
PACIFIC						
500,000 and Over						
Los Angeles, Calif............	102	98	96	116	91	85
100,000–500,000	99	95	93	99	78	72
Seattle, Wash...	97	93	91	49	38	36
Oakland, Calif.........	101	97	95	146	115	107
25,000–100,000						
Salem, Oregon.	97	92	90			
10,000–25,000....	97	93	92			
Olympia, Wash.........	105	101	99			
Vallejo, Calif......	92	87	86			

APPENDIX TABLE 4.—*Distribution of wives of childbearing age in the Health Survey; by occupational class of the head, and by nativity, color, and age of the wife*

Nativity, Color and Age of Wife	Total	Profes-sional	Business	Skilled and Semiskilled	Unskilled	Other and Unknown
Native White						
Total 15–44.. .	284,246	18,494	102,754	130,306	23,376	9,316
15–19	6,839	154	1,473	3,592	1,125	495
20–24	42,280	1,895	12,509	20,974	4,809	2,093
25–29	65,278	4,353	23,065	30,092	5,487	2,281
30–34	60,897	4,418	22,712	27,470	4,527	1,770
35–39	58,920	4,133	23,287	26,044	3,985	1,471
40–44	50,032	3,541	19,708	22,134	3,443	1,206
Foreign White						
Total 15–44 ...	51,901	1,686	13,557	27,248	8,561	849
15–19	83	0	20	41	17	5
20–24	2,020	85	548	1,050	273	64
25–29	6,501	289	1,798	3,404	874	136
30–34	10,693	395	3,031	5,517	1,555	195
35–39	15,197	466	4,003	8,032	2,494	202
40–44	17,407	451	4,157	9,204	3,348	247
Colored						
Total 15–44	39,511	897	2,983	13,946	19,906	1,779
15–19	1,640	15	79	550	834	162
20–24	6,322	114	407	2,228	3,185	388
25–29	9,102	200	633	3,263	4,602	404
30–34	8,117	187	639	3,023	3,972	296
35–39	8,727	213	683	3,052	4,498	281
40–44	5,603	168	542	1,830	2,815	248

APPENDIX TABLE 5.—*Percentage distribution by occupational class of the head. Married women of child-bearing age in the Health Survey; by nativity and color, and by area and size of city*

Size of City and Occupation of Head	Native White					Foreign White					Colored			
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific	East	Central	South	Pacific
500,000 and Over														
Total	100.0	100.1	100.0		100.0	99.9	100.0	100.0		100.0	100.0	100.0		100.0
Professional	7.3	6.0	6.5		12.0	3.4	2.7	6.5		8.0	2.7	2.3		3.6
Business	37.1	34.0	46.8		43.5	27.7	22.7	62.6		40.7	10.0	9.7		19.5
Skilled and Semiskilled	46.6	52.7	41.9		38.0	51.9	57.8	25.8		40.6	34.2	38.4		36.7
Unskilled	9.0	7.4	4.8		6.5	16.9	16.8	5.1		10.7	53.1	49.6		40.2
100,000–500,000														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	99.9	99.9	99.9
Professional	6.2	6.5	6.5	7.5	7.7	2.0	4.0	6.3	3.0	4.7	2.8	1.8	2.0	4.4
Business	33.8	35.9	46.8	42.4	43.6	23.7	24.4	63.9	33.3	34.7	4.8	4.8	6.3	24.1
Skilled and Semiskilled	52.5	51.0	41.9	42.2	41.3	58.7	60.8	25.3	50.6	44.9	39.8	32.4	38.1	24.1
Unskilled	7.5	6.6	4.8	7.9	7.4	15.6	10.8	5.1	13.1	15.6	52.6	60.9	53.5	47.3
25,000–100,000														
Total	100.0	100.1	100.0		100.0	100.0	100.0	99.9	*	100.0	*	100.0	100.0	*
Professional	7.5	4.7	6.4		8.8	3.2	5.0	6.3		5.0		3.7	2.4	
Business	27.7	34.1	46.6		39.7	19.4	26.0	63.9		41.1		4.1	6.4	
Skilled and Semiskilled	54.0	52.3	38.9		44.2	57.2	56.7	25.3		44.0		34.5	35.4	
Unskilled	10.8	9.0	8.1		7.3	20.2	12.3	4.4		9.9		57.7	55.8	
Under 25,000														
Total	100.0	100.0	100.1	100.0	100.0	100.0	100.0	*		100.0	100.0	99.9	100.0	100.0
Professional	6.5	6.9	5.2	5.9	7.1	2.4	3.0			3.8	2.4	3.1	2.7	0.5
Business	32.4	33.2	32.2	18.8	31.6	22.6	20.6			27.9	3.5	4.7	4.7	11.9
Skilled and Semiskilled	45.7	44.5	54.6	31.8	48.0	47.9	29.0			44.4	46.9	29.1	40.1	29.4
Unskilled	15.4	15.4	8.1	43.5	13.3	27.1	47.4			23.9	47.2	63.0	52.5	58.2
Bases for Percentages (Known Occupational Status)														
500,000 and Over	52,331	44,477	27,870		8,736	21,192	13,542	589		1,154	5,615	6,237	11,948	1,653
100,000–500,000	16,200	25,866	17,370	3,597	14,183	5,277	2,201	158	336	1,892	1,271	1,430	4,936	315
25,000–100,000	7,542	17,108	7,818		3,231	1,319	699	54	96	141	69	565	2,932	5
Under 25,000	9,334	9,217		1,379	8,671	1,312	466			624	373	127		194

* Percentage distributions based on fewer than 100 cases are not shown.

APPENDIX TABLE 6.—*Distribution of wives of childbearing age in the Health Survey;
by nativity, color, and educational attainment*

Nativity, Color and Age of Wife	Total	College	High School	7th–8th Grades	Under 7th Grade	Unknown
Native White						
Total 15–44	284,246	32,847	150,365	83,833	17,013	188
15–19	6,839	131	4,807	1,553	342	6
20–24	42,280	3,315	27,930	9,558	1,450	27
25–29	65,278	8,414	38,077	16,102	2,654	31
30–34	60,897	8,145	31,017	18,106	3,593	36
35–39	58,920	7,265	27,508	19,783	4,330	34
40–44	50,032	5,577	21,026	18,731	4,644	54
Foreign White						
Total 15–44	51,901	1,477	11,596	20,514	18,022	292
15–19	83	0	58	23	2	0
20–24	2,020	86	998	711	221	4
25–29	6,501	283	2,422	2,658	1,118	20
30–34	10,693	376	2,898	4,609	2,751	59
35–39	15,197	388	2,943	6,083	5,701	82
40–44	17,407	344	2,277	6,430	8,229	127
Colored						
Total 15–44 .	39,511	1,496	11,647	10,352	15,881	135
15–19	1,640	15	800	441	384	0
20–24	6,322	187	2,843	1,497	1,779	16
25–29	9,102	400	2,964	2,501	3,199	38
30–34	8,117	332	2,063	2,209	3,481	32
35–39	8,727	328	1,888	2,320	4,163	·28
40–44	5,603	234	1,089	1,384	2,875	21

APPENDIX TABLE 7.—*Percentage distribution by educational attainment. Married women of childbearing age in the Health Survey; by nativity and color, and by area and size of city*

Size of City and Education of Wife	Native White					Foreign White					Colored			
	East	Central	South	Mountain	Pacific	East	Central	South	Mountain	Pacific	East	Central	South	Pacific
500,000 and Over														
Total	100.0	100.0			100.1	100.0	100.1			100.0	100.1	100.0		100.0
College	7.5	7.2			16.4	2.2	2.1			8.4	3.6	4.9		3.9
High School	47.4	48.6			65.9	20.0	20.7			48.8	31.8	36.0		33.5
7th-8th Grades	39.8	38.1			16.6	43.8	38.4			30.5	37.0	31.4		26.5
Under 7th Grade	5.3	6.1			1.2	34.0	38.9			12.3	27.7	27.7		36.1
100,000–500,000														
Total	100.0	100.1	99.9	100.0	100.0	100.0	100.1	100.0	100.1	99.9	100.1	100.0	100.1	100.0
College	6.8	11.5	14.4	18.5	17.2	1.4	4.3	8.8	10.1	8.1	2.1	3.1	3.8	6.3
High School	43.7	52.8	58.2	67.7	62.0	13.5	28.8	41.2	48.3	44.0	23.2	34.1	26.9	49.1
7th-8th Grades	39.0	31.6	18.0	11.8	19.4	36.1	44.4	25.4	29.9	36.9	38.1	29.9	21.8	31.0
Under 7th Grade	10.5	4.2	9.3	2.0	1.4	49.0	22.6	24.6	11.8	10.9	36.7	32.9	47.6	13.6
25,000–100,000														
Total	100.1	99.9	100.0		100.0	100.1	100.1	100.1	*	100.2	*	99.9	100.0	*
College	7.3	10.9	20.9		19.0	1.8	4.0	13.8		10.2		2.7	4.0	
High School	53.5	53.0	62.8		59.2	17.4	41.5	51.9		52.4		41.1	25.3	
7th-8th Grades	32.0	30.9	9.8		20.4	36.5	36.2	14.4		27.9		30.0	19.1	
Under 7th Grade	7.3	5.1	6.5		1.4	44.4	18.4	20.0		9.5		26.1	51.6	
Under 25,000														
Total	100.0	99.9	100.0	100.0	100.0	100.0	99.9	*	*	100.0	100.0	100.0	100.0	100.0
College	11.9	15.2	14.9	11.3	16.8	2.9	4.9			7.0	4.6	7.0	2.5	2.5
High School	51.4	45.0	53.3	70.5	59.3	17.0	18.0			37.7	26.0	42.3	24.1	30.3
7th-8th Grades	30.4	33.6	15.1	15.6	22.1	29.0	33.9			41.1	38.1	39.4	15.8	27.4
Under 7th Grade	6.3	6.1	16.7	2.6	1.8	51.1	43.1			14.2	31.3	11.3	57.6	39.8
Bases for Percentages (Known Educational Status)														
500,000 and Over	53,877	45,552			9,012	21,358	13,628			1,197	5,763	6,370		1,844
100,000–500,000	16,704	26,560	28,830	3,734	14,556	5,350	2,229	602	348	1,939	1,339	1,484	12,296	332
25,000–100,000	7,795	17,703	17,978		3,420	1,303	702	160	98	147	73	593	5,265	7
Under 25,000	9,775	9,803	8,325	1,432	9,002	1,377	466	58		647	412	142	3,187	201

* Percentage distributions based on fewer than 100 cases are not shown.

APPENDIX TABLE 8.—*Distribution of wives of childbearing age in the Health Survey; by nativity, color, and family income*

Nativity, Color, and Age of Wife	Total	$5,000 and Over	$3,000– 4,999	$2,000– 2,999	$1,500– 1,999	$1,000– 1,499	Under $1,000 and Total Relief	Total Relief	Un- known
Native White									
Total 15–44..	284,246	5,344	13,644	38,313	54,761	71,849	91,553	37,010	8,782
15–19	6,839	25	88	273	625	1,437	4,201	1,755	190
20–24	42,280	323	892	3,138	6,222	12,139	18,415	6,965	1,151
25–29	65,278	769	2,374	7,938	12,773	18,197	21,412	8,213	1,815
30–34	60,897	1,136	3,048	9,080	12,590	15,579	17,703	7,385	1,761
35–39	58,920	1,514	3,701	9,475	12,374	13,773	16,165	6,927	1,918
40–44	50,032	1,577	3,541	8,409	10,177	10,724	13,657	5,765	1,947
Foreign White									
Total 15–44...	51,901	460	1,330	5,040	9,277	14,401	19,817	8,609	1,576
15–19	83	1	3	3	11	9	49	20	7
20–24	2,020	8	37	166	329	586	816	326	78
25–29	6,501	46	170	623	1,205	1,957	2,289	945	211
30–34	10,693	85	258	1,099	1,922	3,098	3,946	1,625	285
35–39	15,197	155	358	1,397	2,737	4,146	5,982	2,690	422
40–44	17,407	165	504	1,752	3,073	4,605	6,735	3,003	573
Colored									
Total 15–44 ..	39,511			738*	1,361	4,764	31,987	12,272	661
15–19	1,640			15	20	102	1,466	592	37
20–24	6,322			85	121	549	5,451	1,917	116
25–29	9,102			184	279	1,035	7,458	2,673	146
30–34	8,117			161	306	1,089	6,438	2,461	123
35–39	8,727			162	361	1,136	6,938	2,816	130
40–44	5,603			131	274	853	4,236	1,813	109

* The top-income class used for the colored wives is $2,000 and over. This class is virtually equivalent to the $2,000–$2,999 group for whites since only 0.5 per cent of the colored wives reporting $2,000 and over had incomes in excess 6f $3,000.

APPENDIX TABLE 9.—*Percentage distribution by family income. Married women of childbearing age in the Health Survey; by nativity and color, and by area and size of city*

Size of City and Family Income Status	Native White					Foreign White					Colored			
	East	Cen-tral	South	Moun-tain	Pacific	East	Cen-tral	South	Moun-tain	Pacific	East	Cen-tral	South	Pa-cific
500,000 and Over														
Total	100.1	100.0			100.0	100.0	100.0			99.9	100.0	99.9		100.0
$3,000 and Over[1]	8.3	5.7			9.1	4.1	2.4			7.2	3.8	3.4		3.2
2,000-2,999	15.9	14.6			15.8	10.9	8.6			12.7	6.0	7.0		6.4
1,500-1,999	21.5	21.9			21.7	19.6	17.9			20.2	19.1	18.6		21.9
1,000-1,499	24.4	28.3			28.3	27.6	30.9			30.2	71.1	70.9		68.5
Under $1,000 and Total Relief	30.0	29.5			25.1	37.8	40.2			29.6	41.3	39.7		35.4
Total Relief	*15.4*	*11.7*			*9.1*	*17.9*	*16.5*			*9.8*				
100,000-500,000														
Total	99.9	100.0	100.0	100.1	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.1	99.9	100.0
$3,000 and Over	7.8	6.6	9.3	6.9	8.6	3.2	3.2	10.7	4.1	4.2	2.6	1.2	0.9	5.7
2,000-2,999	15.7	12.3	15.4	14.3	16.9	8.8	8.9	15.3	9.1	13.9	5.5	2.7	1.5	11.8
1,500-1,999	20.0	19.1	20.3	19.1	22.9	17.1	17.1	20.1	17.0	21.9	17.3	11.9	8.1	28.4
1,000-1,499	24.6	27.3	25.7	23.7	23.0	28.5	29.9	24.2	27.9	26.1	74.6	84.3	89.4	54.1
Under $1,000 and Total Relief	31.8	34.7	29.3	36.1	28.6	42.4	40.9	29.7	41.9	33.8	52.8	50.1	25.8	18.7
Total Relief	*16.3*	*16.0*	*8.8*	*16.4*	*12.3*	*19.5*	*15.9*	*5.5*	*16.4*	*12.9*				
25,000-100,000														
Total	100.0	99.9	100.0		100.1	100.2	100.0	100.1		99.9	*	100.0	100.0	*
$3,000 and Over	4.1	3.4	9.0		5.3	1.5	3.2	11.3		3.4		0.7	0.5	
2,000-2,999	10.1	9.0	13.4		12.6	6.3	9.3	17.9		12.3		1.4	1.0	
1,500-1,999	17.1	16.9	18.3		18.4	14.0	17.6	17.9		17.1		10.5	5.5	
1,000-1,499	27.7	28.7	24.6		27.1	27.6	32.7	25.8		26.0		87.4	93.0	
Under $1,000 and Total Relief	41.0	41.9	34.7		36.7	50.8	37.2	27.2		41.1		42.9	21.1	
Total Relief	*17.5*	*14.8*	*10.9*		*14.8*	*24.2*	*14.8*	*4.0*		*11.6*				

APPENDIX TABLE 9. Concluded—Percentage distribution by family income. Married women of childbearing age in the Health Survey; by nativity and color, and by area and size of city.

Under 25,000	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Total........	100.0	100.0	100.1	100.1	100.0	100.1	100.0	*	*	100.0	100.0	100.0	100.0	100.0
$3,000 and Over.	4.8	3.1	4.5	1.8	6.4	2.1	1.5			5.2				
2,000-2,999.	10.3	9.0	8.1	4.9	19.1	7.0	5.5			19.8	1.5	0.7	0.2	8.1
1,500-1,999.	18.1	14.0	12.9	10.9	23.0	14.6	9.2			21.9	3.7	1.4	0.6	15.7
1,000-1,499.	26.8	24.5	25.8	32.1	25.4	27.2	23.7			24.7	15.6	9.4	3.5	38.6
Under $1,000 and Total Relief..	40.0	49.4	48.8	50.4	26.1	49.2	60.1			28.4	79.2	88.5	95.7	37.6
*Total Relief....... *	*17.0*	*17.0*	*10.9*	*22.0*	*9.6*	*21.7*	*20.3*			*8.0*	*44.3*	*33.8*	*16.2*	*16.2*

Bases for Percentages
(Known Income Status)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
500,000 and Over.....	51,403	43,709	27,870	3,673	8,992	20,756	13,168	*	*	1,191	5,671	6,187	12,181	1,843
100,000-500,000...	16,494	25,790	17,537		14,333	5,314	2,162	582	341	1,909	1,329	1,467	5,227	331
25,000-100,000......	7,607	17,407	8,099		3,370	1,310	688	151	98	146	68	581	7	7
Under 25,000........	9,330	9,516		1,425	8,909	1,344	469	56		640	404	139	197	197

¹ $2,000 and over for colored.

* Percentage distributions based on fewer than 100 cases are not shown.

APPENDIX TABLE 10.—*Selective factors*[1] *in occupational differentials in fertility within groups of specific family-income status. Survey data for 17,728 native-white married women of childbearing age in Newark, Fall River, St. Paul, and Oakland*

Family Characteristics	$2,000 and Over				$1,500–1,999			
	Professional	Business	Skilled and Semiskilled	Unskilled	Professional	Business	Skilled and Semiskilled	Unskilled
Total Number of Families......	613	2,370	866	55	228	1,508	1,425	130
Per Cent With:								
Two Workers or More.....	19	33	56	84	15	23	38	59
Wife Gainfully Employed.....	12	15	21	29	10	13	17	31
Relatives in Residence	15	25	46	62	10	16	22	36
Status of Secondary Family Living With								
Parents	2	6	17	33	2	3	7	18
Number Restricted to Primary Families								
Without Multiple Workers or Relatives								
in Residence..	457	1,414	337	8	181	1,068	814	47
Per Cent Discarded...........	25	40	61	85	21	29	43	64
Births per 1,000 Wives:								
Total Families.....	96	74	66	—	94	75	82	73
Primary Families Without Multiple Work-								
ers or Relatives in Residence..... ..	111	99	119	—	111	92	99	—

	$1,000–1,499				Under $1,000 and Total Relief			
Total Number of Families...	131	1,336	2,382	339	108	1,029	3,843	748
Per Cent With:								
Two Workers or More.....	17	18	29	33	20	19	26	23
Wife Gainfully Employed....	11	10	17	18	8	9	12	9
Relatives in Residence.	7	11	14	19	11	11	13	13
Status of Secondary Family Living With								
Parents...	0	1	3	7	1	1	3	4
Number Restricted to Primary Families								
Without Multiple Workers or Relatives								
in Residence..........	107	1,027	1,594	207	81	780	2,709	554
Per Cent Discarded.....	18	23	33	39	25	24	30	26
Births per 1,000 Wives:								
Total Families...........	109	92	90	125	136	115	138	145
Primary Families Without Multiple Work-								
ers or Relatives in Residence.	123	102	113	160	—	121	153	158

[1] The selective factors consist in differences in the prevalence of certain family characteristics associated with low fertility in the occupational subdivisions of specific income classes. They are presumably due to the use of *total family* income for cross-classifications with occupational status of the head.

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INDEX

Abortion. *See* Pregnancy wastage

Adjustment for city-size and age, 49–50, 86, 119–120, 185, 191. *See* Standardization for age

Age of wives:

  by education, 87–90, 109–268

  by family income, 120–123, 142–143, 270

  by nativity and color, 37, 51–55, 77–78, 87–90, 109, 120–123, 142–143, 266, 268, 270

  by occupation of the head, 51–55, 77, 266

Age-specific fertility. *See* Marital fertility by age

Beebe, Gilbert W., 39, 219–220

Berry, Katharine, 221–222, 233, 235

Bias:

  nature of, 17, 172, 174, 176–177, 179–182, 220–223, 249–250

  tests for, 44–45, 49–50, 86, 112–114, 119–120, 164–166, 185, 273

Boston, fertility rates in, 35–36, 70, 72, 100, 103–104, 136–137, 259, 262, 264

Britten, Rollo H., 2–3, 6–7, 10, 200, 261

Buffalo, fertility rates in, 35–36, 70, 72, 100, 103–104, 136–137, 259, 262, 264

Canada. Dominion Bureau of Statistics, 80

Census. *See* United States Census

Central, regional data:

  crude birth rates, 23, 27–29, 259–260, 262

  fertility differentials, 31–34, 68–78, 100–108, 133–144

  importance in the survey, 4, 259–260

pregnancy wastage, 229–232, 235

socio-economic characteristics, 49, 85, 116, 267, 269, 271–272

surveyed cities represented, 2–11, 259–261

under-enumeration of births, 23–29, 40, 259–265

Chicago, fertility rates in, 35–36, 70, 72, 100, 103–104, 136–137, 188, 259, 262, 264

Cities included in the *Survey*, 259–261

Cleveland, fertility rates in, 35–36, 70, 72, 100, 103–104, 136–137, 259, 262, 264

Colored:

  age distribution, 7, 37, 51–55, 77, 87–90, 120–123, 266

  childlessness among, 38–40, 42, 243

  crude birth rates of, 23–24, 27–30, 41, 243, 259–263

  geographic distribution, 33, 259–261

  marital fertility rates among, 29–42, 56–57, 62–66, 73–77, 91–92, 95–99, 106–110, 124–132, 140–144, 196–199, 242–244, 246–247, 251–252

  number in sample, 14, 259–261

  pregnancy wastage among, 218, 223–230, 232–235

  proportion in sample, 6

  rural survey of, 194–199, 210–215, 251–252

  socio-economic characteristics, 47–51, 56, 81–87, 91, 109–110, 114–120, 124, 140, 172–173, 210–211, 244, 247, 251–252, 266–272

  under-enumeration of births among, 22–29, 41, 259–265

Contraception, spread of, 245, 254

Counties included in rural survey, 194–195